Public Health Scotland COVID-19 & Winter Statistical Report

As at 17 January 2022

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Contents

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Published management information are non-official statistics. They may not comply with the UK Statistics Authority's Code of Practice with regard to high data quality or high public value but there is a public interest or a specific interest by a specialist user group in accessing these statistics as there are no associated official statistics available.
Users should therefore be aware of the aspects of data quality and caveats surrounding these data, all of which are listed in this document. Therefore, the data presented are subject to change.

Introduction

Since the start of the Coronavirus-19 (COVID-19) outbreak Public Health Scotland (PHS) has been working closely with Scottish Government and health and care colleagues in supporting the surveillance and monitoring of COVID-19 amongst the population.
As part of our continuous review of reporting, as of 08 December 2021 Public Health Scotland has implemented changes to the COVID-19 Weekly Report to support the reader in drawing insights from a wider range of existing metrics around COVID-19 and winter pressures.

Caution should be used when making comparisons between metrics; each metric is calculated independently and may cover different time periods or cohorts of the population. The consolidated report will include the following content weekly:

COVID-19

- Summary of tests and cases
- Contact Tracing
- Hospital and ICU admissions
- Testing in care homes
- COVID-19 vaccination status cases, hospitalisations and deaths
- Covid-19 vaccination uptake summary
- Adhoc reporting on topics such as: Covid-19 and Vaccination in pregnancy, Equality reporting etc.

Hospital/ Wider System Pressures

- Unscheduled Care
- Waiting Times
- Delayed Discharges

Additional charts for a number of variables related to COVID-19 service use in the NHS, including some metrics previously presented in the weekly COVID-19 report, are available to view in our interactive dashboard. These include breakdowns by age, sex and deprivation. The variables currently available on the dashboard include:

- Positive cases per day and cumulative total
- COVID-19 hospital admissions
- COVID-19 patients admitted to ICU admissions
- COVID-19 related contacts to NHS24 and the Coronavirus Helpline
- Community Hubs and Assessment Centres
- Scottish Ambulance Service incidents
- Contact tracing
- Health care workers
- Care homes
- Targeted community testing
- Travel outside of Scotland
- Quarantine Statistics
- NHS Protect Scotland App
- Lateral Flow Device (LFD) Testing

The Public Health Scotland COVID-19 Daily Dashboard publishes daily updates on the number of positive cases of COVID-19 in Scotland, with charts showing the trend since the start of the outbreak. From 26 February 2021 the Daily Dashboard also includes daily updates on vaccinations for COVID-19 in Scotland.

There is a large amount of data being regularly published regarding COVID-19 (for example, Coronavirus in Scotland – Scottish Government and Deaths involving coronavirus in Scotland – National Records of Scotland). This report complements the range of existing data currently available.

Main Points

- As at 16 January 2022, there have been 1,097,158 confirmed COVID-19 cases by PCR (polymerase chain reaction) only; 27,944 of these were recorded in the most recent week, a decrease of 65.2% from the previous week

- There has been a 7.1% increase in the number of Lateral Flow Device (LFD) asymptomatic tests carried out in the last week. There have been 20,098,516 LFD tests carried out in Scotland since 19 November 2020, of which 222,827 were positive (1.1%)

- In the last week from 08 January to 14 January 2022, in an age-standardised population, the rate of acute COVID-19 related hospital admissions in individuals that received a booster or third dose of a COVID-19 vaccine was between 2.3 to 3.9 times lower than in individuals who are unvaccinated or have only received one or two doses of a COVID-19 vaccine

- In the week ending 09 January 2022, 87,243 individuals were recorded in the contact tracing software, from which 53,517 unique contacts have been traced

- In the week ending 11 January 2022, there were 1,040 admissions to hospital with a laboratory confirmed test of COVID-19, a decrease of 4% from the previous week. The highest number of new admissions are now in those aged 80+

- The proportion of all people who were admitted to hospital within 14 days of a laboratory confirmed COVID-19 positive test has declined, from 12% in the week ending 31 January 2021, to 1% in the most recent week ending 02 January 2022

- In the week ending 16 January 2022 there were 31 new admissions to Intensive Care Units (ICUs) with a laboratory confirmed test of COVID-19. This is a decrease of 46.3% from the week ending 09 January 2022

Incidence of Variants of Concern and Variants Under Investigation

The Omicron variant was originally detected in South Africa and now represents the dominant variant in Scotland.

Further information on previous Omicron reporting can be found here.

Public Health Scotland (PHS) continues to monitor COVID-19 Variants of Concern, in collaboration with other Public Health Agencies in the UK.

The latest information on the number of such variants detected by genomic analyses across the UK is published by UK Health Security Agency (UKHSA).

COVID-19 Daily Data

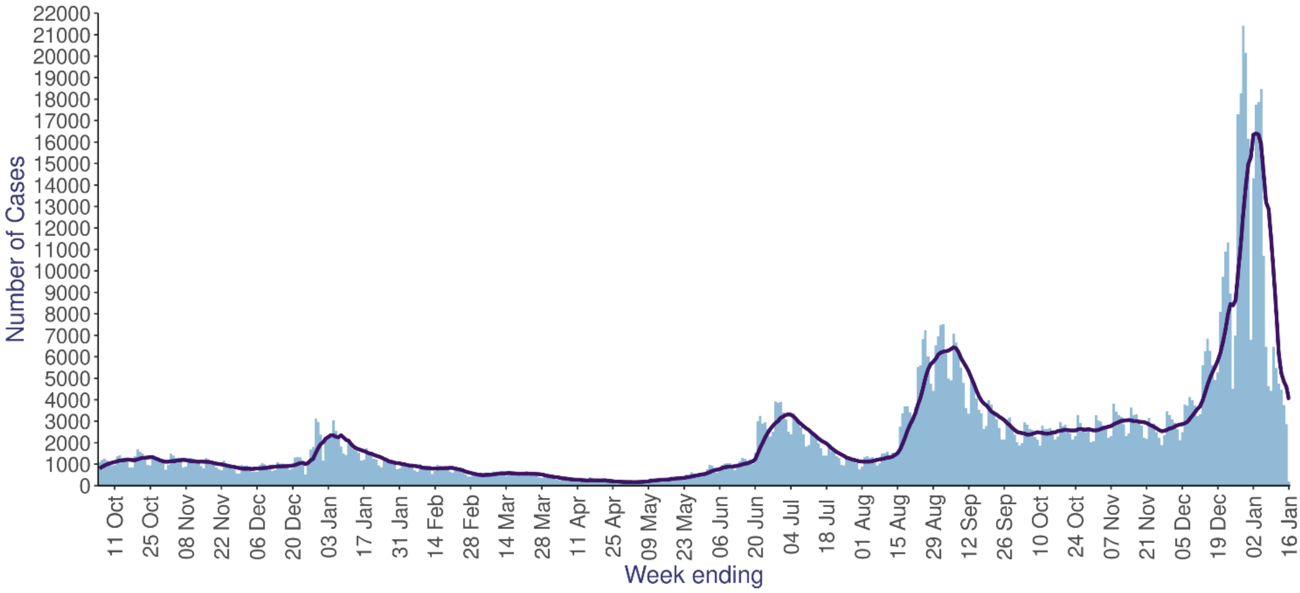
The Public Health Scotland COVID-19 Daily Dashboard publishes daily updates (5-days per week, Monday to Friday) on the number of positive cases of COVID-19 in Scotland, with charts showing the trend since the start of the outbreak.

The total number of people within Scotland who have, or have had COVID-19, since the coronavirus outbreak began is unknown. The number of confirmed cases is likely to be an underestimate of the total number who have, or have had, COVID-19. A person can have multiple tests but will only ever be counted once. The drop in the number of confirmed cases at weekends likely reflects that laboratories are doing fewer tests at the weekend.

On 05 January 2022, the Scottish Government announced that asymptomatic people who return a positive lateral flow test (LFT) will no longer have to confirm their positive result with a PCR test.

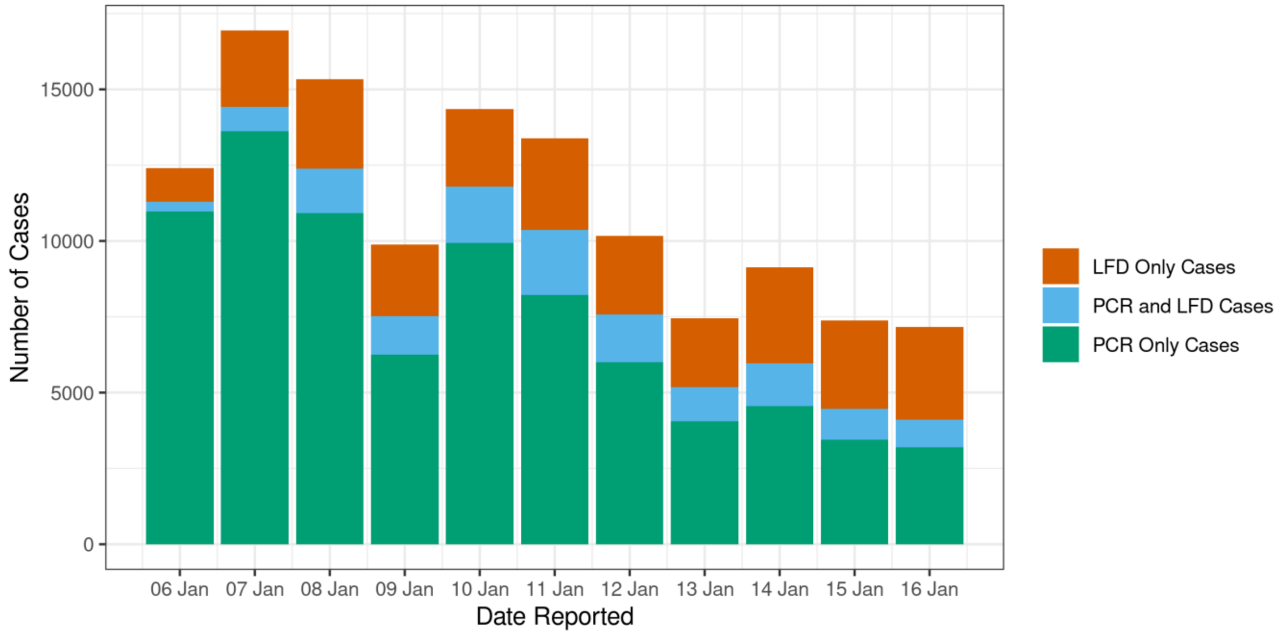
- There have been 1,097,158 people in Scotland who have tested positive with a PCR test, at any site in Scotland (NHS and UK Government Regional Testing centres), for COVID-19 up to 16 January 2022
- In the week ending 16 January 2022 there were 27,944 confirmed COVID-19 cases, with a seven-day rolling average of 3,992 cases based on PCR test results only.[1]
- From 06 January 2022 to 16 January 2022 there have been 123,573 people in Scotland who have tested positive for COVID-19 on either a PCR or LFD test.[2]

Figure 1: Number of positive PCR cases per day with 7 day average



1. Correct as at 17 January, may differ from more recently published data in the previous week's report and on the COVID-19 Daily Dashboard.

Figure 2: Number of positive cases by test type per day, 06 January 2022 to 16 January 2022*

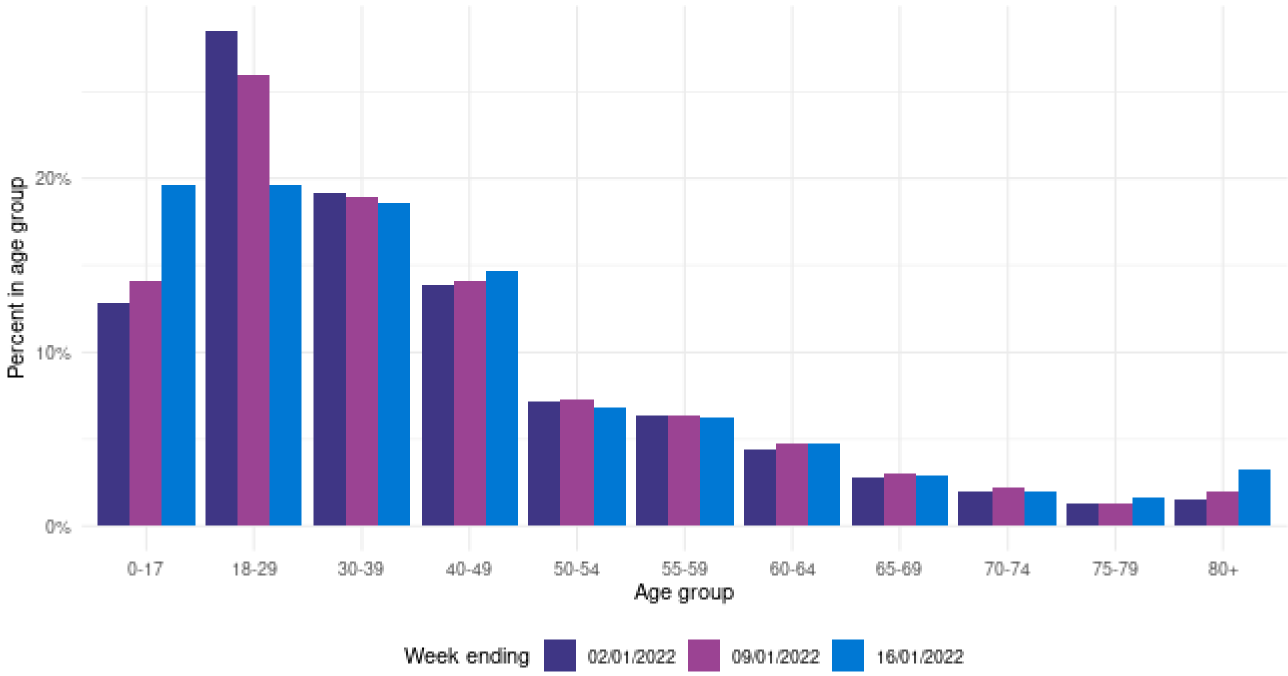


*Case Definition: Includes either a person's first LFD or PCR positive test. LFD positive cases that are followed by a negative PCR result within 48 hours will be excluded. Cases will only be counted once. The data may be subject to future revision as the new method for counting combined PCR and LFD tests evolves.

PCR Cases

Figure 3 below shows the proportion of confirmed PCR COVID-19 cases by age group for the most recent three weeks.

Figure 3: Proportion of confirmed PCR COVID-19 cases by age group, weeks ending 02 January 2022 – 16 January 2022

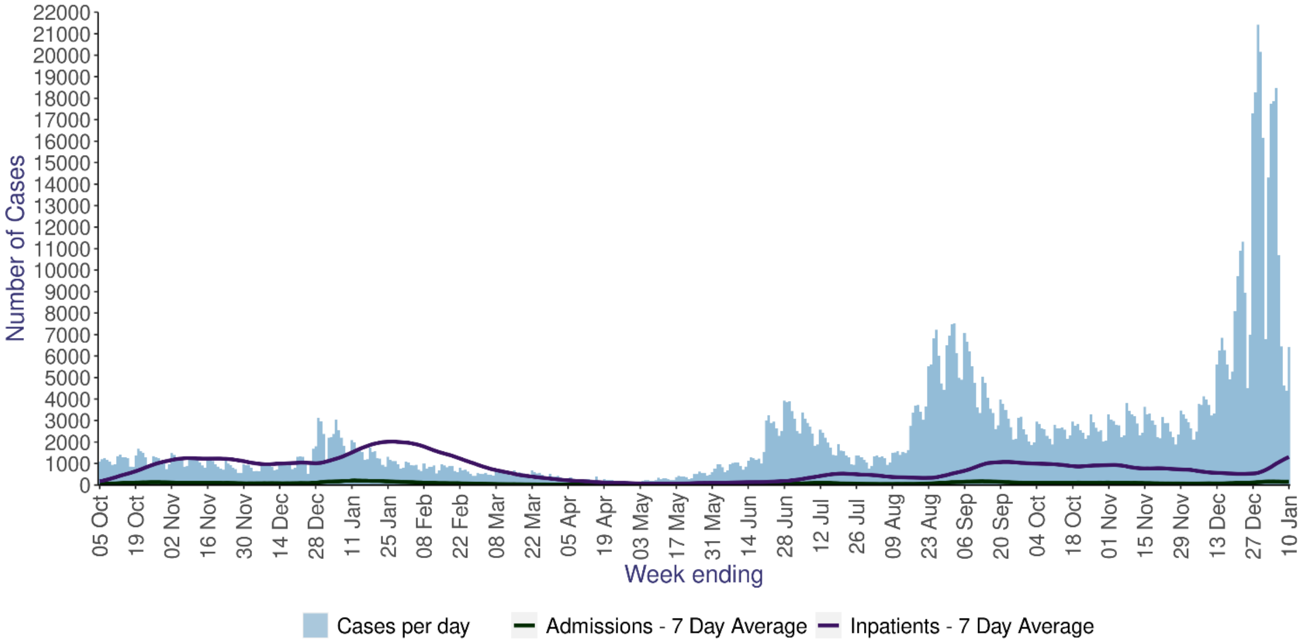


The daily dashboard also includes data on Hospital Admissions and ICU admissions for patients with COVID-19:

- In the week ending 11 January 2022, there were 1,040 admissions to hospital with a laboratory confirmed test of COVID-19.
- In the week ending 16 January 2022 there were 31 new admissions to Intensive Care Units (ICUs) for confirmed COVID-19 patients.

The number of confirmed daily PCR COVID-19 cases decreased from 17,855 to 6,405 between 04 January 2022 and 10 January 2022. During this same time period, the daily COVID-19 confirmed hospital admissions has decreased from 164 to 152 (seven-day rolling average). The seven-day average of inpatients in hospital has increased by 43.0% (from 912 to 1,304).

Figure 4: Number of PCR Positive Cases, Admissions and Inpatients, as at 10 January 2022[2]



2. Please refer to Appendix 3 - Hospital Admissions Notes for definitions of hospital admissions and inpatients.

Additional charts and data are available to view in the interactive dashboard accompanying this report.

Data is also monitored and published daily on the Scottish Government Coronavirus website.

Lateral Flow Device Testing

Across Scotland, there are numerous testing pathways being rolled out using Lateral Flow Devices (LFD) - a clinically validated swab antigen test taken that does not require a laboratory for processing. This test can produce rapid results within 45 minutes at the location of the test.

Some of the areas using LFD tests are: schools, health and social care workers, care homes and more. Public Health Scotland has collected the information on the number of LFD tests carried out across Scotland and will now publish this information weekly. This section is the totality of LFD across Scotland and across strategies. Sections focussing in on specific topics such as Schools, Higher Education and Community testing can be found later in the report.

On 05 January 2022, the Scottish Government announced that people who do not have symptoms will no longer be asked to take a polymerase chain reaction (PCR) test to confirm a positive Lateral Flow Device (LFD) result. Instead, anyone with a positive LFD, who does not have symptoms, should report the result online as soon as the test is done. In order to ensure that we continue to provide the most accurate information, changes have been made to the national COVID-19 case definition to reflect this revised testing strategy.

Since 19 November 2020, there have been 20,098,516 LFD tests carried out in Scotland, of which 222,827 were positive (1.1%). Figure 5 below shows the weekly trend of tests carried out from week ending 29 November 2020 to 16 January 2022.

There has been a 7.1% increase in the number of tests carried out from the week ending 09 January 2022 to the week ending 16 January 2022. Table 1 shows the number of LFD tests carried out in Scotland by testing group.

More detailed information can be found within the LFD section on our interactive dashboard.

For additional details on Lateral Flow Device Tests, please see - Appendix 5 – Lateral Flow Device Testing

Figure 5: Trend of LFD tests carried out in Scotland from 29 November 2020 to 16 Jan 2022

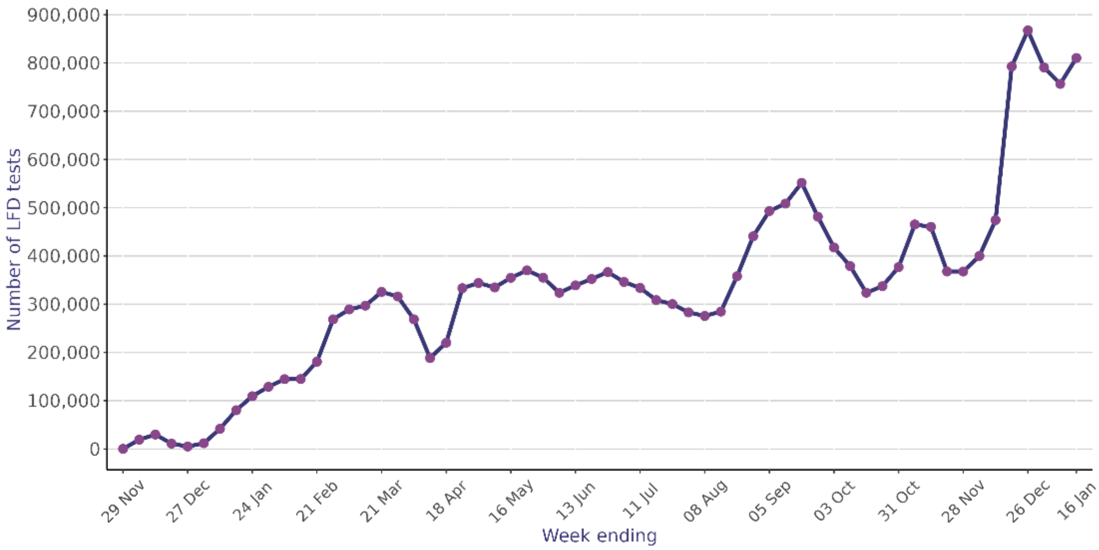


Table 1: Number of LFD[10] tests by Test group 19 November 2020 – 16 January 2022

Test Group	Test Reason	Number of tests	Number of positive tests	% LFT positive
Care Home Testing	Care Home - Visiting Professional	62,456	143	0.2%
	Care Home - Visitor	8,33,805	1,021	0.1%
	Care Home Staff	1,941,376	3,549	0.2%
Community Testing	Community Testing	105,058	954	0.9%
Education Testing	Combined School Staff	59,443	219	0.4%
	ELC Staff	343,005	2,303	0.7%
	Primary School Staff	1,615,349	7,123	0.4%
	Secondary School Pupils	1,006,617	11,643	1.2%
	Secondary School Staff	916,721	3,832	0.4%
	University Staff	13,525	138	1%
	University Students	52,266	626	1.2%
	University Testing Site	97,175	387	0.4%
Healthcare Testing	Healthcare Worker	3,138,950	10,309	0.3%
	Primary Care And Independent Contractors	2,38,283	747	0.3%
Social Care Testing	Children, Young People and Mental Health	1,042	0	0%
	NSS Portal Social Care	773,941	2,318	0.3%
	Residential Homes	16,441	47	0.3%
	Support Services	39,117	554	1.4%
Universal Offer	Attend An Event	922,266	3,677	0.4%
	High Cases In Local Area	667,822	16,026	2.4%
	Lives With Someone Who Is Shielding	84,512	1,975	2.3%
	Travel Within UK	249,454	1,676	0.7%
	Universal Offer	3,505,378	105,403	3%
Workplace Testing	Private Sector	28,395	135	0.5%
	Public Sector	80,404	369	0.5%
	Quarantine Hotel Staff/Security Personnel	5,339	151	2.8%
	Third Sector	4,406	28	0.6%
	UK Gov Other	2,522,164	36,194	1.4%
Other	Other	773,806	11,280	1.5%
Total	**Total**	**20,098,516**	**222,827**	**1.1%**

Data extracted: 17 January 2022

Please note some of the data is suppressed due to disclosure methodology being applied to protect staff confidentiality.

COVID-19 Hospital Admissions

Hospital Admissions ‘with’ COVID-19

Since the start of the pandemic Public Health Scotland have been reporting on the number of people in acute hospitals with recently confirmed COVID-19. These admissions are identified from Rapid and Preliminary Inpatient Data (RAPID) and defined as the following: A patient’s first positive PCR test for COVID up to 14 days prior to admission to hospital, on the day of their admission or during their stay in hospital. If a patient’s first positive PCR test is after their date of discharge from hospital, they are not included in the analysis.

It is important to note, that the figures presented below may include patients being admitted and treated in hospital for reasons other than COVID-19. Supplementary analysis on COVID-19 related acute hospital admissions by vaccine status is also available within the COVID-19 cases, acute hospitalisations, and deaths by vaccine status section of this report.

Figure 6 below shows the weekly trend of hospital admissions with COVID-19 from week ending 05 January 2021 to 11 January 2022.

Figure 6: Trend of hospital admissions ‘with’ COVID-19 in Scotland

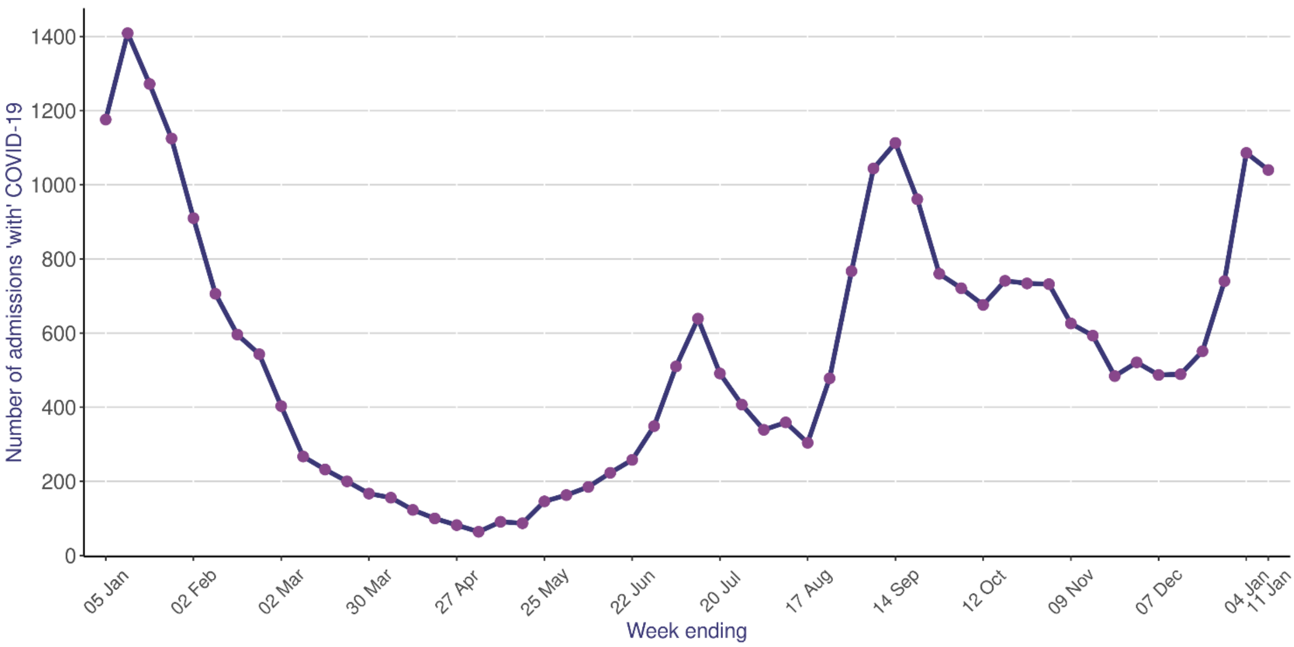


Table 2 below shows a breakdown of people admitted to hospital across all ages and by age group for the most recent four weeks. Data from March 2021 is available on the Covid Statistical Report website.

Table 2: COVID-19 hospital admissions by age as at 11 January 2022[3]

Age Band	15 December – 21 December	22 December – 28 December	29 December – 04 January	05 January – 11 January
Under 18	58	77	119	115
18-29	21	62	76	88
30-39	53	69	85	100
40-49	60	69	87	93
50-54	46	50	53	71
55-59	50	54	66	62
60-64	44	32	85	67
65-69	32	39	75	77
70-74	36	60	75	94
75-79	47	46	94	88
80+	104	182	271	185
Total	**551**	**740**	**1,086**	**1,040**

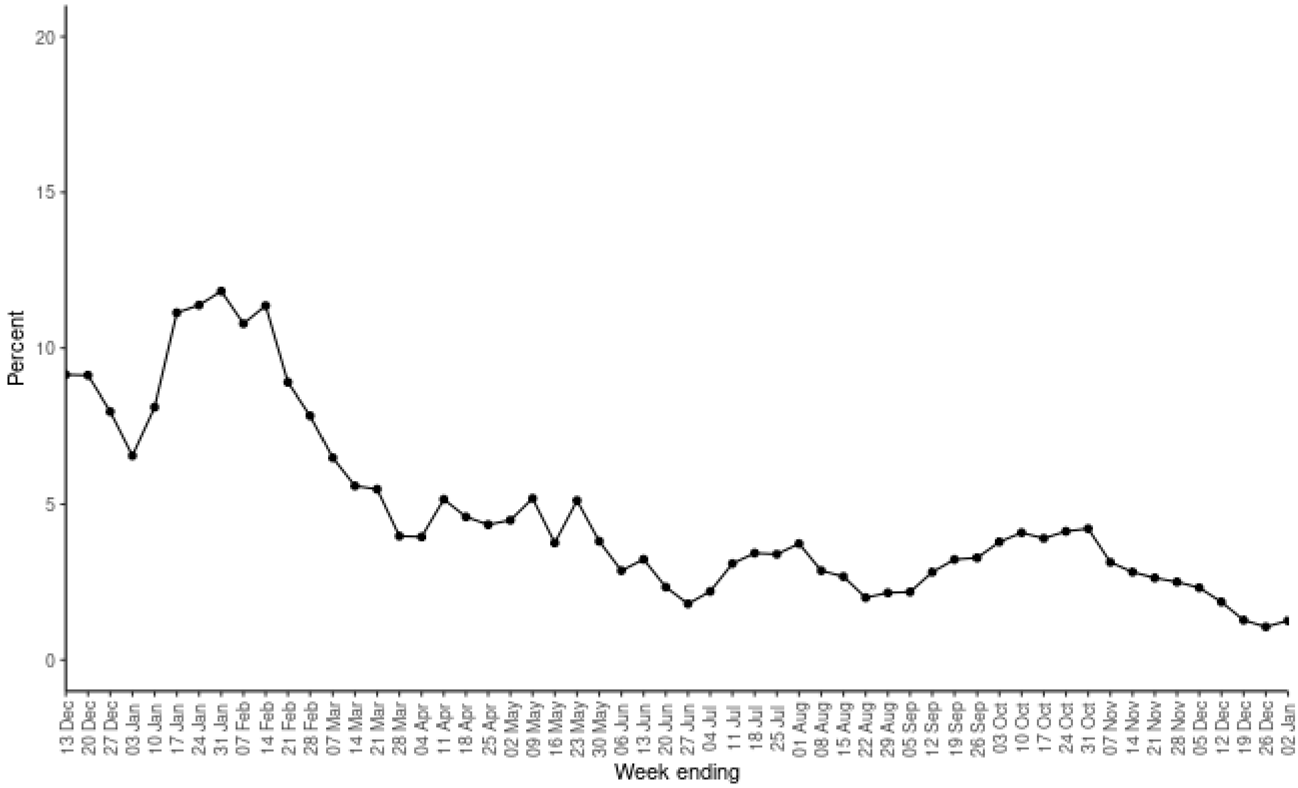
Source: RAPID (Rapid and Preliminary Inpatient Data)

3. Please refer to Appendix 3 – Hospital Admissions Notes for explanatory notes regarding RAPID Hospital Admissions.

In the latest week, there has been a 4% decrease in the number of new admissions compared to the previous week, with those aged 80+ years having the highest number of admissions. Also, in the latest week approximately 49% of the hospital admissions related to patients aged 60+.

In recent months, the proportion of all people who were admitted to hospital within 14 days of a laboratory confirmed COVID-19 positive test has also declined, from 12% in the week ending 31 January 2021 to 1% in the most recent week ending 02 January 2022 (Figure 7).

Figure 7: Proportion of weekly cases admitted to hospital within 14 days of a first positive test



Hospital Admissions ‘because of’ COVID-19

On 07 January 2022, Public Health Scotland published an initial review of clinical audit data on the causes of hospital admission for people with a recent COVID-19 diagnosis. At that time, partial data were available from 2 NHS Boards, Grampian and Greater Glasgow and Clyde. This interim report provides the complete set of data for these two Boards, and also provides additional data from a third NHS Board, Dumfries and Galloway.

A final report containing data from at least one and possibly two additional Boards will be published on 26 January 2022.

As previously noted, not all people hospitalised with a recent COVID-19 diagnosis will be admitted because of their infection. However, knowing the proportion of people who are in hospital because of their infection, as opposed to coincidental with it, can help signal whether population-level changes in public health measures may be warranted, such as a tightening or easing of restrictions. It can also help us to predict whether we are likely to see future pressures on hospital systems based on recent patterns of COVID-19 infections in the surrounding community. This information does not detract from the fact that regardless of the cause of admission, any person in hospital with a recent COVID-19 diagnosis requires appropriate management of their infection.

Public Health Scotland last published an analysis of the proportion of people in hospital ‘because’ of their COVID-19 infection on 01 December 2021. That analysis covered the period of March - August 2021. To ascertain the primary reason for admission in the previous analysis, patient discharge data from the national Scottish Morbidity Records (SMR01 - acute inpatient and day case activity) dataset for six Boards were analysed. Findings from the report concluded that, at a time when the Delta variant of COVID-19 was responsible for nearly all circulating infections in Scotland, 68% of patients were in hospital ‘because of’ their COVID-19 infection.

In light of the recent rapid increase in Covid-19 case numbers in Scotland - of which more than 90% are now estimated to be the new Omicron variant - it is important to update this analysis. However, a limitation of the previously-published approach is that there is typically a two to three-month lag in receiving SMR01 discharge summaries from NHS boards. A different approach, such as one that uses clinical auditing of hospital admission records to monitor the distribution of people in hospital ‘because of’ as opposed to coincidental ‘with’ COVID-19, offers an opportunity for a timelier understanding of the characteristics of people in hospital with a recent COVID-19 diagnosis.

In accordance with the Caldicott confidentiality and data sharing agreement, Public Health Scotland and NHS Greater Glasgow and Clyde conducted a clinical audit of case notes of people admitted with a recent COVID-19 diagnosis at acute care hospitals during the first four days of January 2022. NHS Dumfries and Galloway and NHS Grampian carried out a similar review using daily admission data routinely provide by acute care hospitals in the region over a longer period, between 30 December 2021 and 9 January for NHS Dumfries and Galloway and 11 January 2022 for NHS Grampian.

The primary outcome of interest in this current investigation was whether a person was admitted to hospital ‘because of’ or coincidental ‘with’ a COVID-19 diagnosis of a community-acquired infection. People admitted to hospital were included in the investigation if they had a COVID-19 PCR confirmed diagnosis within 14 days prior to or in

the 48 hours following their admission date. Admissions that were either confirmed or probable 'because of' COVID-19 include those who met a clinical definition or who were admitted onto a COVID-19 ward, where available. Nosocomial infections, defined as a positive PCR after the 48 hours following admission, or those infections with an unknown PCR specimen date, were excluded from the analysis. A more detailed description of methods and definitions are provided in Appendix 7.

Among the 396 hospital admissions records with a recent COVID-19 diagnosis, 70% (n=279) were admitted 'because of' or 'with' community acquired COVID-19 infection. During the investigation, there were on average 1.7 admissions per day in NHS Dumfries and Galloway, 8 in NHS Grampian and 31.2 in NHS Greater Glasgow and Clyde with a recent community acquired COVID-19 infection. The remaining 30% (n=117) admissions had either a definite or possible hospital onset (n=66) or a yet unknown or indeterminate onset date (n=51) and were excluded.

Numbers of hospital admissions 'because of' or 'with' COVID-19 (n=279)

Table 3 shows that across the 3 NHS Boards, 63% (n=175 of 279) of acute hospital admissions were determined to be 'because of' COVID-19 as opposed to coincidental 'with' COVID-19. The proportion in hospital 'because of' COVID-19 is lower than the previously reported value of 68% based on SMR01 discharge summaries from six NHS Boards from between March and August 2021.

Proportions in hospital because of their infection were reasonably similar in NHS Boards' Dumfries and Galloway and Greater Glasgow and Clyde Boards, at 57% (17 of 30) and 54% (56 of 103) respectively. In Grampian, the proportion in hospital because of COVID-19 was markedly higher, at 70% (102 of 146).

Table 3: Number and proportion of hospital admissions within 14 days of a positive community-acquired COVID-19 infection 'because of' or coincidental 'with' COVID-19, selected NHS Boards, December 2021-January 2022*

NHS Board	Hospital admissions 'because of' COVID *	Hospital admissions coincidental 'with' Covid	Total
	Number (%)	Number (%)	Number (%)
Dumfries and Galloway	17 (57%)	13 (43%)	30 (100%)
Grampian	102 (70%)	44 (33%)	146 (100%)
Greater Glasgow and Clyde	56 (54%)	47 (46%)	103 (100%)
Total	**175 (63%)**	**104 (37%)**	**279 (100%)**

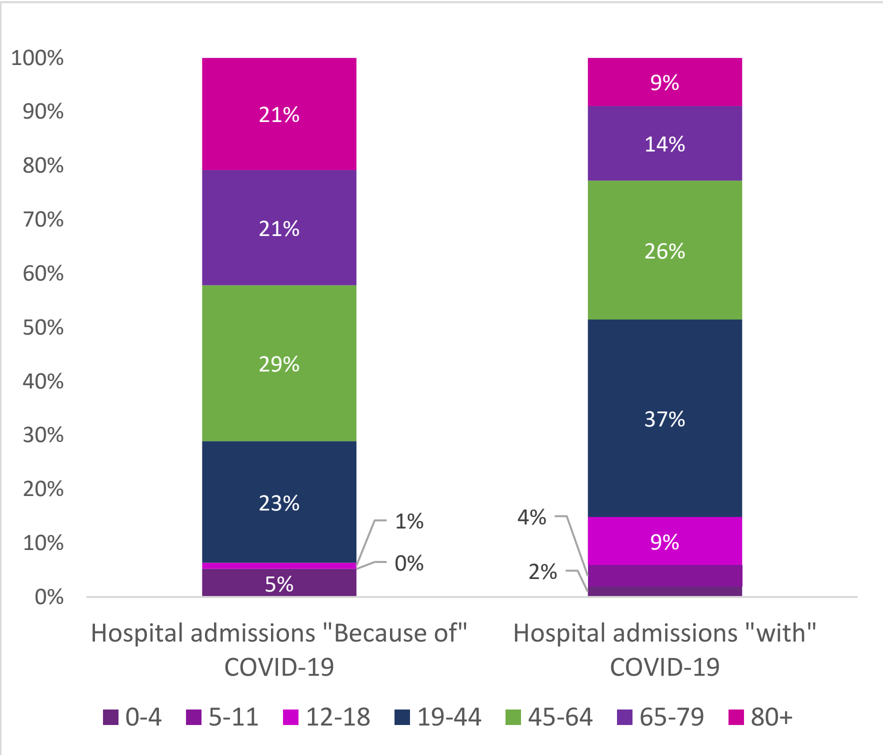
* Hospital admissions 'because of' COVID-19 includes probable and confirmed outcomes. Reporting dates as follows: NHS Board Dumfries and Galloway between 30 December 2021 and 9 January 2022, NHS Board Greater Glasgow and Clyde between 1 and 4 January 2022, NHS Board Grampian between 30 December 2021 and 11 January 2022.

Characteristics of hospital admissions 'because of' or 'with' COVID-19

The greatest number of people admitted to hospital 'because of' COVID 19 were aged 45-64 years; this is in contrast to the largest number of people in hospital coincidental 'with' COVID-19, who were between the ages of 19 and 44 years.

Figure 8 shows a marked difference in the age profile of amongst people in hospital 'because of' COVID-19 compared to 'with' COVID-19. People aged 65 and older account for 42% of all hospital admissions for COVID-19 but just 25% of people 'with' a recent COVID-19 diagnosis. People aged 80 years and older were more than twice as likely to be in hospital because of their COVID-19 diagnosis as compared to those recently diagnosed with COVID-19 but in hospital for a difference cause (21% versus 9%).

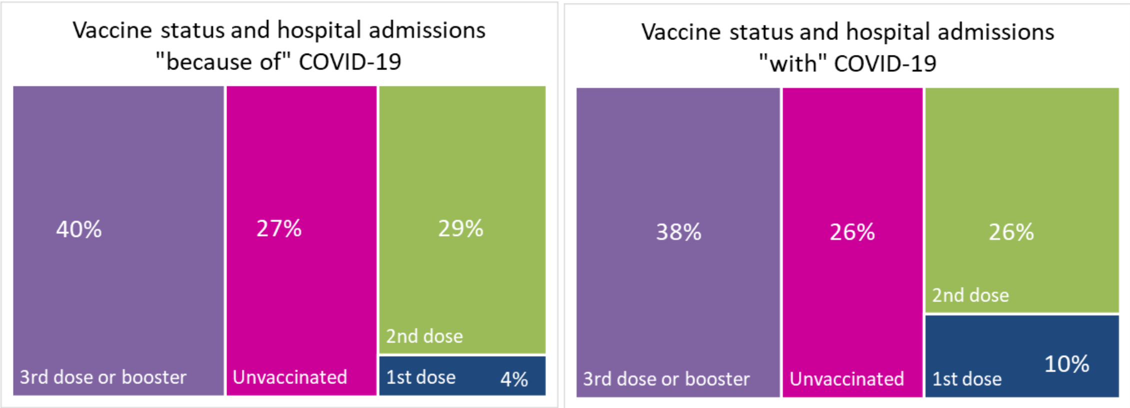
Figure 8: Proportion of community-acquired hospital admissions within 14 days of a positive COVID-19 test 'because of' (n=173) or 'with' COVID-19 (n=101) by age group*, selected NHS Boards, December 2021-January 2022*



* Age unknown for 5 people;
** Hospital admissions 'because of' COVID-19 includes probable and confirmed outcomes. Reporting dates as follows: NHS Board Dumfries and Galloway between 30 December 2021 and 9 January 2022, NHS Board Greater Glasgow and Clyde between 1 and 4 January 2022, NHS Board Grampian between 30 December 2021 and 11 January 2022.
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Equal proportions of people in hospital 'because of' COVID-19 and 'with' COVID-19 were fully vaccinated (Figure 9), defined as having a third dose or booster shot, although the similarity in this distribution across these two groups may be confounded by differences in the age and access to a third dose or booster.

Figure 9: Proportion of community-acquired hospital admissions within 14 days of a positive COVID-19 test ‘because of’ (n=173) or ‘with’ COVID-19 (n=101) by vaccine status*, selected NHS Boards, December 2021 - January 2022*



*Hospital admissions ‘because of’ COVID-19 includes probable and confirmed outcomes. Reporting dates as follows: NHS Board Dumfries and Galloway between 30 December 2021 and 9 January 2022, NHS Board Greater Glasgow and Clyde between 1 and 4 January 2022, NHS Board Grampian between 30 December 2021 and 11 January 2022.

SARS-CoV-2 variants amongst people admitted to hospital ‘because of’ or ‘with’ COVID-19 (n=165)

S-gene target failure, a proxy for Omicron, and allele specific PCR results capable of identifying a sample as Omicron or Delta, were available for 60% (165 of 279) of people admitted to hospital with a community acquired COVID-19 infection (Table 4).

Table 4: Number of hospital admissions within 14 days of a positive community-acquired COVID-19 infection ‘because of’ or ‘with’ COVID-19 by COVID-19 variant (n=165), selected NHS Boards, December 2021- January 2022*

NHS Board	COVID-19 variant*	Hospital admission 'because of' COVID-19**	Hospital admission coincidental 'with' COVID-19	Total
Dumfries and Galloway	Delta	2	1	3
	Omicron	9	6	15
	Total	11	7	18
Grampian	Delta	31	23	54
	Omicron	23	7	30
	Total	54	30	84
Greater Glasgow and Clyde	Delta	7	4	11
	Omicron	23	29	52
	Total	30	33	63
Overall	**Delta**	**40**	**28**	**68**
	Omicron	**55**	**42**	**97**
	Total	**95**	**70**	**165**

* S gene target failure or Allele Specific PCR outcome used to identify the Delta or Omicron variant. Variant type was unknown as yet or not possible to ascertain for 114 people;
** *Hospital admissions ‘because of’ COVID-19 includes probable and confirmed outcomes. Reporting dates as follows: NHS Board

Dumfries and Galloway between 30 December 2021 and 9 January 2022, NHS Board Greater Glasgow and Clyde between 1 and 4 January 2022, NHS Board Grampian between 30 December 2021 and 11 January 2022.

Among those admissions with a known variant status, 83% (67 of 81) of people were infected with Omicron in NHS Dumfries and Galloway and NHS Greater Glasgow and Clyde. This is compared to just 36% (30 of 84) of cases in hospital in NHS Grampian. It is likely that the lower proportion of Omicron admissions in NHS Grampian reflects the differing pace of transmission of the new variant across Scotland. By 12 December 2021, more than half of all people testing at Pillar 2 UK Gov labs in the Greater Glasgow and Clyde region and surrounding areas were likely infected by the Omicron variant, whilst in NHS Grampian, that threshold wasn't reached for another week. NHS Grampian's proportion Omicron variant rose from 48% over the first 7 days to 67% across the last 6 days of the investigation.

Available data also show that similar proportions of people with Omicron and Delta were admitted to hospital 'because of' their infections (57%; 55 of 97 and 59%; 40 of 68 respectively). Across the three NHS Boards, a higher proportions of admissions due to Omicron were observed in NHS Dumfries and Galloway and NHS Greater Glasgow and Clyde, whereas the opposite was observed in Grampian. The latter likely reflects the small but growing proportion of Omicron cases in NHS Grampian hospitals.

Although this most recent update to the 12 January report offers new data on Omicron status and additional data from NHS Board Dumfries and Galloway, it should be noted that this investigation was initially conducted during a period of public holidays during which interruption to the supply of laboratory results on Allele Specific Primer and Whole Genomic Sequencing were observed. Testing was also conducted primarily in hospitals, which do not have access to testing platforms that allow for a proxy report of the Omicron or Delta variant using S gene status. This explains the high proportion of admissions for which no immediate assignation of variant type could be made, and unfortunately, limits the conclusions that can be drawn on questions related to variant status.

Whilst clinical case audit reviews provide high-quality, near real-time results, there are other limitations that must be considered when interpreting these findings. Because this method takes a cross-sectional approach to determine whether a person is in hospital 'because of' COVID-19 or coincidental 'with' COVID-19, it may miss people who may have initially been admitted 'with' COVID-19 but who later go on to develop more severe COVID-19-related symptoms during their stay. Conversely, it may also disproportionately capture more severe infections since people with severe infections may stay in hospital longer. Other limitations of this approach, including the substantial time and human resources required to review cases and the challenges of generalising these results beyond these three Boards, are described in Appendix 7.

Public Health Scotland will continue to work with NHS Health Boards to describe the proportion of people in hospital 'because of' or 'with' COVID-19 using appropriate methods to inform and improve the public health response in Scotland. A final update to the clinical audit work will be published as part of the Public Health Scotland Weekly Report on 26 January 2022.

Test and Protect

Scotland's approach to contact tracing has continued to adapt throughout the pandemic to reflect changing circumstances, variability in cases, and increasing proportion of the population fully vaccinated since the roll out of the vaccination programme. The most recent Strategic Framework issued by the Scottish Government in November 2021 sets out how Scotland will continue to adapt now that we are in the phase described as "beyond level zero". That will require a constant review of the associated management information compiled in the weekly report. The information we produce will change over time to reflect the most critical information to help understand, plan and deliver contact tracing at any given point in time.

World Health Organisation (WHO) current guidance on "Contact tracing in the context of COVID-19" focuses on targeted approaches to contact tracing based on transmission patterns, engaging communities, and prioritising follow-up of high risk cases when it is not possible to identify, monitor and quarantine all contacts. For further information please refer to Appendix 2.

Please note, PHS has moved to weekly reporting of this data and cumulative data is available in the interactive dashboard. Data for the most recent week, previously included as provisional, is no longer included as this is variable due to cases which are still open (either because contact tracing is still underway or the NHS Board is still managing the case for a particular reason). Only finalised data will be included within the report going forward.

Further background information and definitions are available in Appendix 4.

Index cases

An **index case** is generated for each positive result with a test date on or after 28 May 2020. This includes tests derived from Scottish and UK Government, as well as self-reported LFD's.

An **individual** is a unique person who has had a positive test. An individual can have multiple positive tests which results in multiple cases within the test and protect system. In these figures, each person is only counted once.

Contact Tracing figures for the week ending 09 January 2022 (based on test date), are detailed in Table 5 below, which provides a recent time trend. A longer time trend is available on the interactive dashboard.

Table 6 provides details of the status of the index cases for each week.

In the week ending 09 January 2022, there were 93,407 Index Cases, of which 35,930 (38.5%) had completed contact tracing by telephone or other digital methods, and a further 619 are in progress (0.7%).

There is a technical issue extracting at source (CMS) the status (New/Not yet started and In progress) of cases for week ending 09 January 2022. A solution is currently being applied and further work is under way to implement this for future publications.

Table 5: Contact Tracing trend information, by week ending

	05 Dec	12 Dec	19 Dec	26 Dec	02 Jan	09 Jan
Total Index Cases[1]	20,649	27,054	43,724	69,423	131,851	93,407
Individuals[2]	19,736	25,940	41,630	66,165	126,369	87,243

1. Does not include "Excluded" cases which are those where a decision has been made that the case should not have been created within the contact tracing system.
2. A count of unique individuals with a positive test. An individual can have multiple positive tests which results in multiple cases within the contact tracing system.

Table 6: Contact Tracing trend information by status, by week ending

Status of cases	05 Dec	12 Dec	19 Dec	26 Dec	02 Jan	09 Jan	Cumulative (from May 2020)
New/ Not yet started[1]	1	0	1	0	556	1,098	1,693
% New/ Not yet started	0.0	0.0	0.0	0.0	0.4	1.2	
In progress[2]	1	0	0	1	121	619	744
% In progress	0.0	0.0	0.0	0.0	0.1	0.7	
Complete[3]	18,088	22,730	35,964	43,516	59,236	35,930	855,749
% Complete	87.6	84	82.3	62.7	44.9	38.5	
Incomplete[4]	2,559	4,324	7,759	25,906	71,938	55,760	254,875
% Incomplete	12.4	16	17.7	37.3	54.6	59.7	

1. New – New/not yet started cases within the contact tracing system.
2. In progress – The case is still in progress with either the case interview to be completed, or contacts related to the case to be followed up.
3. Complete - The case is complete and all achievable contact tracing has been carried out.
4. Incomplete - Unsuccessful attempts to reach or carry out a case interview via the telephone, or for the index case to provide contacts via digital contact tracing.

Method of Contacting Index Cases

The data within this section are based on the number of **completed cases** which are recorded in the contact tracing software, these figures are preliminary and may be updated in subsequent publications.

Public Health Scotland works closely with National Services Scotland (NSS) and the Scottish Government to enable local NHS Boards and the National Contact Centre (NCC) to carry out COVID-19 contact tracing effectively. The approach to contact tracing has adapted as restrictions and policy have changed throughout the pandemic in order to best meet the needs of the Scottish population. As numbers of new cases have increased, the method has changed from attempting to phone all new cases and contacts - to prioritising the highest risk cases for telephone calls and sending public health advice by SMS text or email to all others, who have tested positive for COVID-19 and their close contacts.

The introduction of SMS messaging was designed to get public health advice about isolation to cases and contacts as quickly as possible, this is especially pertinent when daily case numbers are very high. The approach was part of a deliberate decision to manage resources through an agreed framework and is in keeping with the evidence-informed advice of the European Centre for Disease Control.

All index cases will receive an initial SMS or email containing Public Health information and advice, which will then be followed by contact either by telephone, additional SMS or email messages containing further Public Health information and advice.

Table 7 below shows a breakdown of the methods used to contact **completed** index cases over time.

Table 7: Contact method used for contact tracing of completed index cases trend information

	05 Dec	12 Dec	19 Dec	26 Dec	02 Jan	09 Jan
Telephone	12,359	15,561	16,353	18,247	15,403	18,725
% Telephone	68.3	68.5	45.5	41.9	26.0	52.1
SMS	5,729	7,169	19,611	25,269	43,833	17,205
% SMS	31.7	31.5	54.5	58.1	74.0	47.9

1. SMS includes those cases deemed low risk and have completed the Co3 online form, every other completed case is categorised as Telephone

In the week ending 09 January 2022, 52.1% of index cases received a telephone call.

Time for a Positive Index Case to be Contact Traced

The data within this section are based on the number of **completed cases** which are recorded in the contact tracing software, these figures are preliminary and may be updated in subsequent publications.

The three measures shown are;

- the time between a sample being taken and the positive individual being contacted (i.e. interviewed by a contact tracer or completing the online tracing form)
- the time between the record appearing in the CMS and the positive individual being contacted (i.e. interviewed by a contact tracer or completing the online tracing form)
- the time between the record appearing in the CMS and contact tracing being closed (i.e. contacts have been interviewed, attempted to be interviewed or contacted digitally).

These figures are now weekly measures, data are available for previous weeks within the interactive dashboard.

Table 8 and Figure 10 below describes the timeliness of contact tracing by calculating the hours between a test sample being taken and the index case being contacted by Test and Protect either by phone or SMS.

Table 8: Time (hours) between date test sample taken (specimen date) and the positive index case being contacted, for cases completed[5]

Hours taken	Week Ending 09 January 2022		
	Number of Complete Index Cases	% of Total Complete Cases	% of Total Complete & Incomplete Cases
0-24	5,339	14.9	5.8
24-48	10,293	28.7	11.2
48-72	5,706	15.9	6.2
Over 72	6,216	17.3	6.8
Not recorded* - SMS	7,505	20.9	8.2
Not recorded* – Phone	871	2.4	0.9
Total Complete Cases	**35,930**	**100**	
Incomplete Cases	55,760		60.8
Total Complete & Incomplete Cases	**91,690**		**100**

5 For further information and additional notes on Contact Tracing, please see Appendix 4 – Contact Tracing

*Improvements into recording of times and dates are being investigated and technical solutions will be identified to reduce the proportion of 'Not recorded' cases. This will be implemented February 2022.

Figure 10: Trend in time (hours) between date test sample taken (specimen date) and the positive individual being called for cases completed; by week

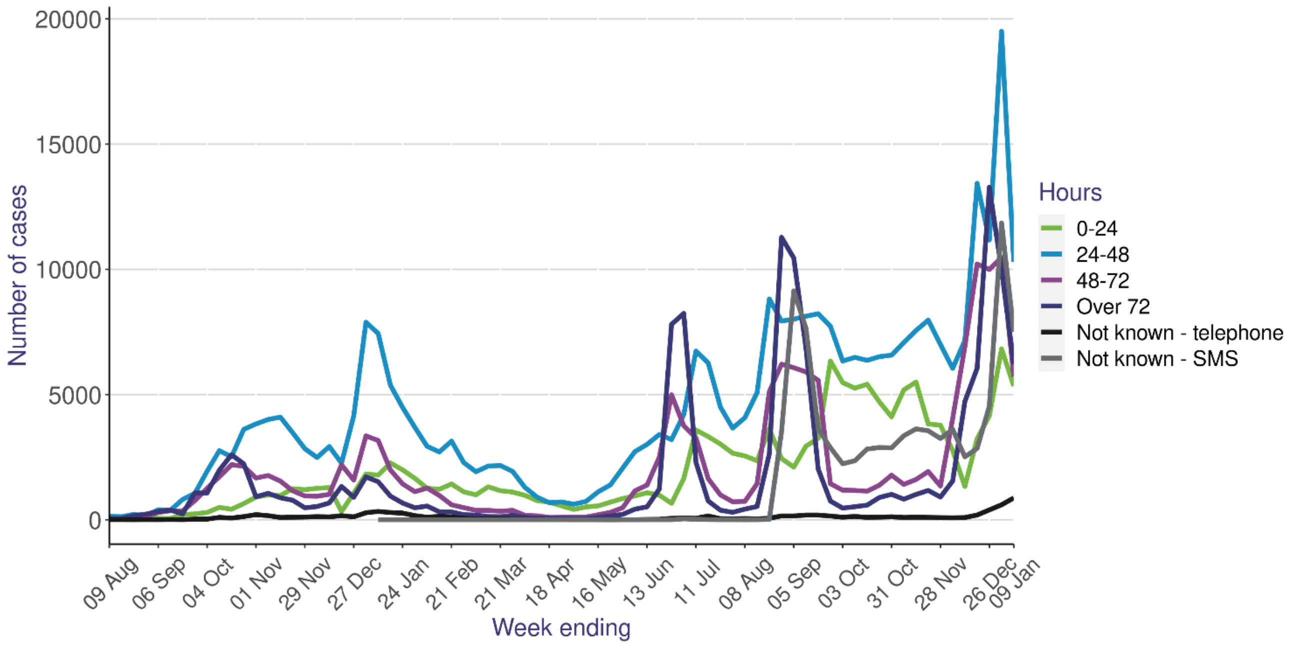


Figure 10 shows that more positive cases were contacted over 72 hours after their test sample was taken in June 2021, August 2021 and December 2021, which corresponds with a rise in cases over the same periods.

Table 9: Time (hours) between case created in CMS and the positive individual being contacted[5, 6]

Hours taken	Week Ending 09 January 2022		
	Number of Complete Index Cases	% of Total Complete Cases	% of Total Complete & Incomplete Cases
0-24	20,522	57.1	22.4
24-48	3,632	10.1	4.0
48-72	2,128	5.9	2.3
Over 72	1,278	3.6	1.4
Not recorded* – SMS	7,504	20.9	8.2
Not recorded* - Phone	866	2.4	0.9
Total Complete Cases	**35,930**	**100**	
Incomplete Cases	55,760		60.8
Total Complete & Incomplete Cases	**91,690**		**100**

5 For further information and additional notes on Contact Tracing, please see Appendix 4 – Contact Tracing

6 Includes being interviewed by a contact tracer or submitting preliminary information via a CO3 form

*Improvements into recording of times and dates are being investigated and technical solutions will be identified to reduce the proportion of 'Not recorded' cases. This will be implemented February 2022.

Table 10: Time (hours) between case created in CMS to its closure[5, 7]

Hours taken	Week Ending 09 January 2022		
	Number of Complete Index Cases	% of Total Complete Cases	% of Total Complete & Incomplete Cases
0-24	15,439	43.0	16.8
24-48	5,477	15.2	6.0
48-72	7,379	20.5	8.0
Over 72	3,611	10.1	3.9
Not recorded* – SMS	1,922	5.4	2.1
Not recorded* - Phone	2,102	5.9	2.3
Total Complete Cases	**35,930**	**100**	
Incomplete Cases	55,760		60.8
Total Complete & Incomplete Cases	**91,690**		**100**

5 For further information and additional notes on Contact Tracing, please see Appendix 4 – Contact Tracing

7 Measured by the time taken to complete the final contact interview for high risk settings/contacts and those completed via SMS

*Improvements into recording of times and dates are being investigated and technical solutions will be identified to reduce the proportion of 'Not recorded' cases. This will be implemented February 2022.

Incomplete index cases

Table 11 and Figure 11 below show the different reasons why an index case is categorised as incomplete (previously referred to as failed) within the contact tracing system. Incomplete cases are defined as: unsuccessful attempts to carry out a case interview via the telephone, or for the index case to provide contacts via digital contact tracing. This would include scenarios where the mobile/home phone/email address provided by the case was incorrect and no other method of contact could be established; where SMS/telephone call attempts to the case had been made but not been successful in eliciting a response from the index case; where the index case has failed to pass relevant data protection identity checks and where the index case has refused to participate in the contact tracing process.

For operational purposes some index cases are categorised as incomplete because the telephone process has started, but does not complete for the reasons outlined in Table X below. Public Health information is typically sent by SMS to 99% of the incomplete index cases.

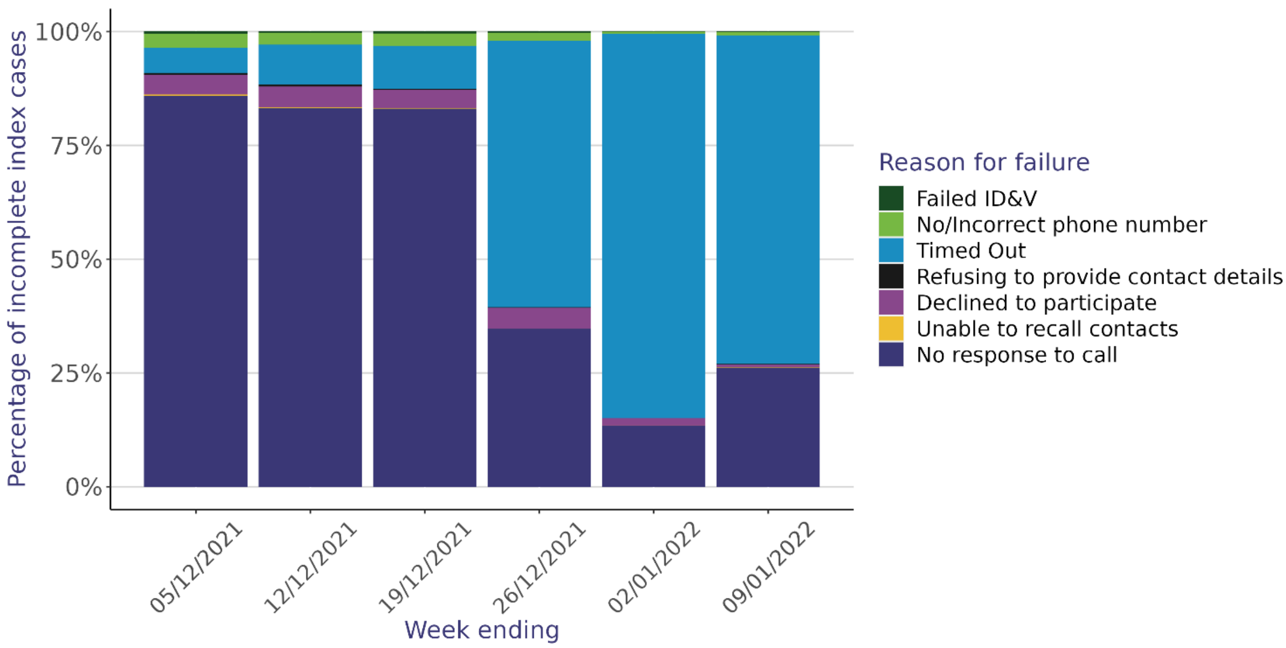
Table 11: Number of incomplete index cases by reason

Reason for Incompletion	Week Ending 09 January 2022	
	Number of Index Cases	% of Incomplete Index Cases
Failed ID & verification	52	0.7
No response to call	14,608	26.2
No/incorrect phone number	486	0.9
Refused to provide contact details	21	0.0
Declined to participate / unable to recall contacts	426	0.7
Timed out[1]	40,167	72.0
Total incomplete cases	**55,760**	**100.0**
% incomplete as proportion of all index cases		

1. Timed out includes individuals contacted by SMS and asked to complete an online contact tracing form, but haven't completed the form within 5 days.

In week ending 09 January 2022, 26.2% of incomplete index cases were due to the index case not responding to calls from Test and Protect.

Figure 11: Proportion of reasons for incomplete index cases



Contacts

The Test and Protect system ensures all positive index cases are asked to identify their close contacts, whether they were contacted by telephone and/or SMS. Table 11 below shows the recent trend information of contacts reported to Test and Protect by the index case.

Table 12: Contact Tracing contacts trend information, by week ending

	05 Dec	12 Dec	19 Dec	26 Dec	02 Jan	09 Jan
Total Primary Contacts[1]	42,567	59,631	66,728	75,775	106,735	61,628
Unique Primary Contacts[2]	31,208	45,990	56,085	65,595	96,549	53,517
Average number of primary contacts per case	2.1	2.2	1.5	1.1	0.8	0.7

1. Total number of primary contacts recorded in the contact tracing system.
2. Unique number of primary contacts each week. A contact may have been in close contact with multiple index cases.

The average number of primary contacts per case has remained stable over recent weeks.

Contacts not required to self-isolate

Following the Scottish Government announcement on 05 January 2022, from 06 January 2022 fully vaccinated adults and those under the age of 18 years and 4 months do not need to self-isolate as long as they return a negative LFD test result for 7 consecutive days and remain fever free. This applies to both household and non-household contacts. If any of the LFD tests are positive the contact will be managed as an index case and will not need to book a follow-up PCR to confirm the positive LFD result.

Since the beginning of contact tracing, a small proportion of primary contacts who were successfully contacted were advised they did not need to isolate. Up to 09 January 2022, a total of **3,454** cumulative primary contacts, pertaining to completed index cases, were not advised to self-isolate. This represents **1.1%** of the total **304,122** cumulative primary contacts for which this information is known. Some reasons why contacts do not need to isolate include; children under the age of 16, contact was wearing PPE or did not come into close contact with a positive case.

In the week ending 09 January 2022, of the **53,517** unique contacts recorded, **4,613** (8.6%) went on to test positive within ten days of their contact with an index case.

COVID-19 Vaccine

On 08 December 2020, a COVID-19 vaccine developed by Pfizer BioNTech was first used in the UK as part of national immunisation programmes. The AstraZeneca (Vaxzevria) vaccine was also approved for use in the national programme, and rollout of this vaccine began on 04 January 2021. Moderna (Spikevax) vaccine was approved for use on 08 January 2021 and rollout of this vaccine began on 07 April 2021.These vaccines have met strict standards of safety, quality and effectiveness set out by the independent Medicines and Healthcare Products Regulatory Agency (MHRA).

For most people, a 2-dose schedule is advised for the vaccines. For the Pfizer BioNTech (Comirnaty) vaccine, the second vaccine dose can be offered between 3 to 12 weeks after the first dose. For the AstraZeneca (Vaxzevria) and Moderna (Spikevax) vaccine, the second dose can be offered 4 to 12 weeks after the first dose.

Information on uptake across the vaccine programme is available on a daily basis via the PHS COVID-19 Daily Dashboard, 5 days a week at 2pm (Monday to Friday). This provides a cumulative picture of the position nationally and locally.

The dashboard provides total uptake nationally with breakdowns by Joint Committee on Vaccination and Immunisation (JCVI) age based cohorts and non age based cohorts for priority groups 1-9.

The vaccination content of this weekly publication is kept under continual review and specific editions have contained more in-depth analyses of uptake by particular groups or characteristics, including uptake by ethnicity and deprivation category, for teachers, for prisoners and for pregnant women.

COVID-19 Vaccination Uptake

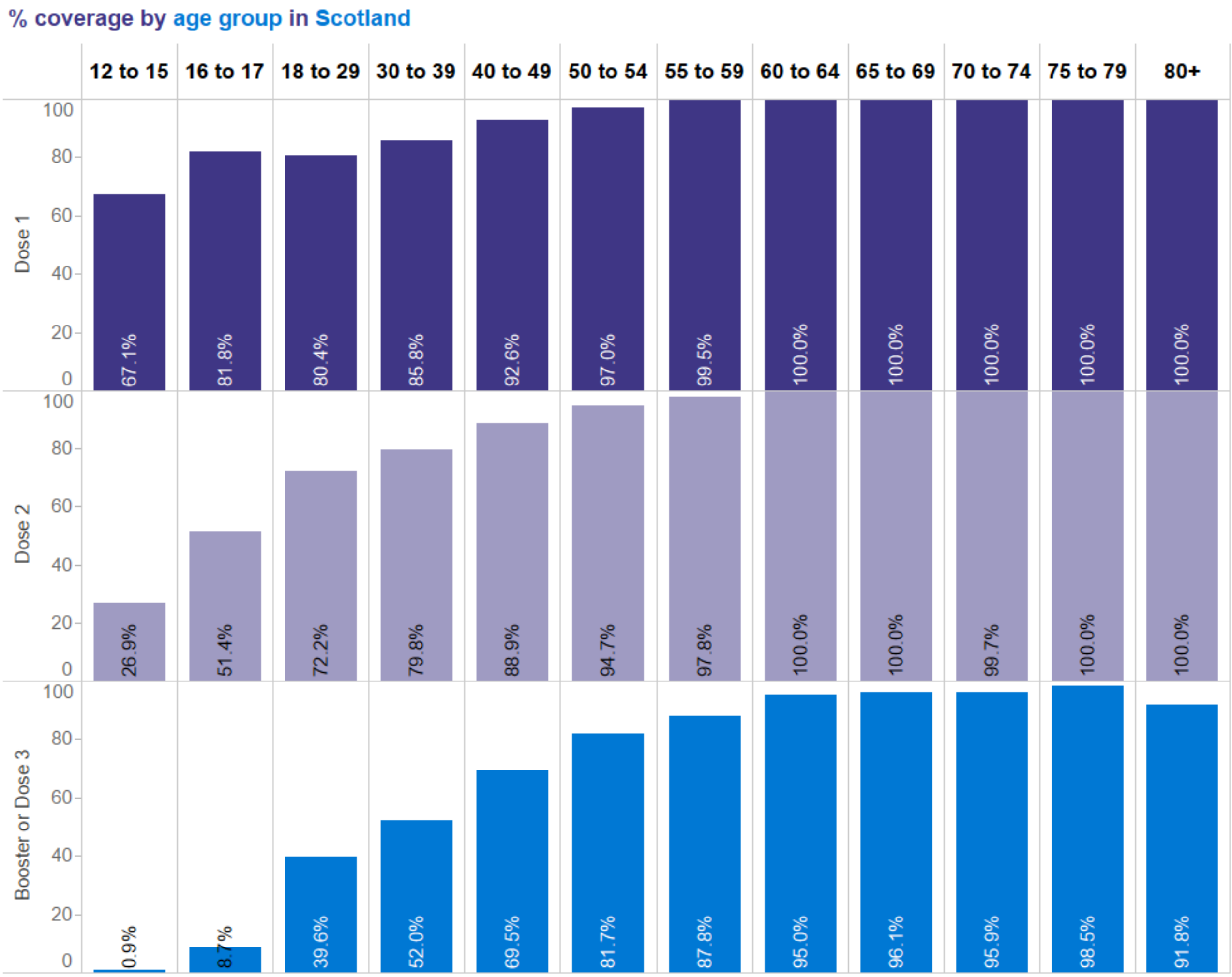
As of 17 January 2022, there has been over 11.7 million Covid-19 vaccine doses administered in Scotland, since the programme began on 08 December 2020.

- 4.40 million people protected through their first dose of the COVID-19 vaccination; 93.3% of those aged 18 and over and 91.8% of those aged 12 and over.
- 4.09 million people provided with further protection by receiving their second dose, of these, 89.4% are aged 18 and over and 85.4% of those aged 12 and over.
- 3.20 million people have received their booster/dose 3, of these, 71.9% are aged over 18 and over and 67.0% of those aged 12 and over.

More detailed age information can be in Figure 12.

Daily Vaccination uptake information is available via the PHS Covid Daily Dashboard.

Figure 12: Covid-19 Vaccine uptake – percentage coverage by age group in Scotland



COVID-19 Vaccine Wastage

Given the scale of the Covid-19 vaccination programme, some vaccine wastage has been unavoidable for a variety of reasons including logistical issues, storage failure and specific clinical situations.

The initial planning assumption for the vaccination programme was that there would be around 5% vaccine wastage. Table 13 below shows the trend of the percentage of vaccines wasted by calendar month between June – December 2021.

In December 2021, the percentage of vaccines wasted was 0.6%. The top reasons for doses wasted in this month were: excess stock (57%), particulate contamination (18%), expired shelf life of stock (14%) other reasons (11%).

Table 13: Number of COVID-19 Vaccination doses wasted by Month[1,2,3,4,5]

Measure	July-21	Aug-21	Sept-21	Oct-21	Nov-21	Dec-21
Number of doses administered[1]	641,177	568,203	303,931	884,381	1,017,131	1,369,363
Number of doses wasted[2]	16,150	17,457	10,089	9,116	8,605	8,608
Percentage wasted[3] (%)	2.5	2.9	3.2	1.0	0.8	0.6

Source: NSS Service Now, COVID-19 Vaccine Wastage.

Data correct at 14/1/22
1. The number of vaccine doses administered (all doses).
2. The total number of vaccine doses which could not be administered and therefore wasted.
3. % Wasted is measured as:
(Number of Doses Wasted x 100) / (Number of Doses Wasted + Administered)
4.Excludes GP practice information.
5.Excludes wastage from clinical trials

COVID-19 Vaccine Certification

To show COVID-19 vaccine status, there are a number of options and individuals can choose to use one or more of these:

- Use the NHS Covid Status App
- Request a paper copy of your COVID-19 Status
- Download a PDF copy of your COVID-19 Status

The NHS Covid Status App was launched on 30 September 2021. It is free and offers digital proof of vaccination via a QR code for each vaccination received. You can request a vaccine certificate if you’re aged 12 and over and have been vaccinated in Scotland. The record will not show any vaccinations given outside of Scotland.

- As of midnight 15 January 2022 the NHS Covid Status App has been downloaded 2,431,409 times. It is important to note a single user may choose to download the App on multiple devices, so this figure does not represent unique individuals

- Between 03 September 2021 (introduction of QR codes) and midnight 08 January 2022

    - 715,974 paper copies of COVID-19 Status have been requested. This may not represent unique users if an individual requests a second copy (for example if they have lost their paper copy)

    - 1,736,949* PDF versions of COVID-19 Status have been downloaded. This provides a measure of the total number of times a new QR code has been generated via PDF. An individual can generate more than one successful QR code so the figure does not represent unique users

*01, 02 and 03 October data for PDFs is missing due to a technical error, we can reasonably estimate that there were 35,000 – 45,000 PDFs successfully generated PDFs in total for those three days.

COVID-19 Cases, Hospitalisations, and Deaths by Vaccine Status

Vaccine Surveillance

Public Health Scotland has a COVID-19 vaccine surveillance strategy to monitor the effectiveness, safety and impact of all approved COVID-19 vaccines in Scotland. The key measure of the success of the vaccination programme in preventing infection, hospitalisations and deaths is vaccine effectiveness.

The summary data presented in this chapter record the total number of COVID-19 cases, COVID-19 related acute hospital admissions and confirmed COVID-19 deaths by their vaccination status. This data should not be used to measure vaccine effectiveness. **Please note that this section only includes PCR confirmed COVID-19 cases, COVID-19 related acute hospital admissions and confirmed COVID-19 related deaths. Lateral flow device (LFD) cases are not included in this section and therefore will result in an underestimation of recent case rate trends. Work is underway to include these data in future publications.**

PLEASE READ BEFORE REVIEWING THE FOLLOWING TABLES AND FIGURES

Interpretation of data

There is a large risk of misinterpretation of the data presented in this section due to the complexities of vaccination data. A blog post by the UK Health Security Agency (UKHSA), formerly Public Health England (PHE), provides a comprehensive explanation of the biases and potential areas for misinterpretation of such data. They state that **a simple comparison of COVID-19 case rates in those who are vaccinated and unvaccinated should not be used to assess how effective a vaccine is in preventing serious health outcomes, because there are a number of differences between the groups, other than the vaccine itself, and these biases mean that you cannot use the rates to determine how well the vaccines work.**

Below are examples of some of the complexities and biases that need to be taken into consideration when interpretation these data.

Vaccinated individuals can still be infected with COVID-19

In Scotland, there has been a very high uptake of the COVID-19 vaccine. As of 17 January 2022, 89.4% of 18 years old and over have received a second dose and 71.9% have received a third dose or booster of COVID-19 vaccine. No vaccine is 100% effective and it's expected that cases, hospitalisations, and deaths from COVID-19 will occur in the vaccinated population as well as the unvaccinated population.

The current evidence suggests that you may test positive for COVID-19, or be reinfected even if you are vaccinated, especially since the emergence of the Omicron variant in the UK. The major benefit of vaccination for omicron is to protect from severe disease. Follow public health guidance and test yourself if you develop any COVID-19 like symptoms.

COVID-19 vaccines protect most people against severe outcomes, but some people will get sick because no vaccine is 100% effective

Evidence suggests the COVID-19 vaccines are 90% effective at preventing a severe outcome of COVID-19. COVID-19 hospitalisations and deaths are strongly driven by older age, with most deaths occurring in those over 70 years old and having multiple other illnesses. But overall, you are less likely to be hospitalised if you are vaccinated with a booster.

Data and rates presented in this section are not a measure of vaccine effectiveness

Vaccine effectiveness is a scientific method used to measure how well a vaccine protects people against outcomes such as infection, symptoms, hospitalisation and death in the 'real-world'. Unlike case rates, vaccine effectiveness analysis accounts for potential biases in the data and risk factors such as age, sex, prior infection, co-morbidities, socio-economic status, and time since vaccination. This method is the most robust way to measure if a vaccine is working.

The data and rates presented in this section do not account for these biases and risk factors and should not be used to measure vaccine effectiveness. We include links to vaccine effectiveness studies below.

There is likely to be systematic differences and biases between the vaccinated and unvaccinated groups, such as behaviour, vulnerability and previous infection, that are unaccounted for when comparing rates. As most of the population is vaccinated, these differences become more evident and could create bias in case/hospitalisation/death rates between vaccinated and unvaccinated population. For example, people who are vaccinated may be more likely to follow other government guidance such as regular testing and reporting for COVID-19, which makes them more likely to be identified as a case than unvaccinated people, resulting in higher case rates in the vaccinated population.

Vaccine effectiveness wanes over time

COVID-19 vaccine effectiveness wanes over time. Within the first and second dose population there will be a number of individuals that will have exceeded the recommended time for their next vaccine dose. These people may be more susceptible to a severe outcome and could result in higher COVID-19 case, hospitalisation and death rates in the first and second dose vaccine groups. For example, some of the older individuals who have exceeded the recommended time will have not received their next vaccine dose because of their frailty or ill health. They are, therefore, more likely to be hospitalised or die if they get COVID-19.

Difficulty knowing who is in the unvaccinated population

There is a lot of uncertainty about who is in the unvaccinated population, which makes interpretation of COVID-19 rates in this group difficult. Everyone in Scotland who is registered with a GP is assigned a unique CHI number. This number is how we estimate Scottish residents for the analysis in this section, however it has its limitations when people leave Scotland and do not inform their GP, resulting in an overestimate of Scottish residents. To try and account for this issue, we also use COVID-19 vaccination records to calculate the number of people in the vaccinated population. This helps determine whether people are still resident in Scotland, however, those in the unvaccinated population have

not had recent contact with a vaccination centre and therefore we have to rely on GP records, which are likely to be more out of date than vaccine records.

Summary of key results

- **Case rates have declined in the last week from 08 January 2022 to 14 January 2022. Caution should be taken when interpreting recent case trends due to the change in policy from 06 January 2022 where an asymptomatic individual who tests positive via a LFD test is not required to take a confirmatory PCR test. This section of the report only includes PCR confirmed COVID-19 cases and does not include cases confirmed by a LFD test**

- In the last week from 08 January 2022 to 14 January 2022, the seven-day rolling average of COVID-19 related acute hospital admissions decreased from 126.57 to 114.00 admissions per day

- In the last week from 08 January to 14 January 2022, in an age-standardised population, the rate of acute COVID-19 related hospital admissions in individuals that received a booster or third dose of a COVID-19 vaccine was between 2.3 to 3.9 times lower than in individuals who are unvaccinated or have only received one or two doses of a COVID-19 vaccine

- In the last week from 01 January 2022 to 07 January 2022, in an age-standardised population, the death rate in individuals that received a booster or third dose of a COVID-19 vaccine was between 16.1 to 25.9 times lower than individuals who are unvaccinated or have only received one or two doses of a COVID-19 vaccine

COVID-19 cases by vaccination status

Recent studies have been released by UKHSA, looking into the effect of vaccination against mild and severe COVID-19. UKHSA analyses show vaccine effectiveness against symptomatic disease with the Delta variant to be approximately 65 to 70% with AstraZeneca (Vaxzevria) and 80 to 95% with the Pfizer-BioNTech (Comirnaty) and Moderna (Spikevax) vaccines. Data from the UKHSA shows that vaccine effectiveness is waning, but remains high, against hospitalisation and death.

The first real world results of the effectiveness of the booster vaccination against symptomatic disease shows very high vaccine effectiveness, higher than for the primary course, at 93-94%. Analyses from Scotland show that the booster and third dose of the COVID-19 vaccines are associated with 57% reduced risk of symptomatic infection with the Omicron variant compared to those who are more than 25 weeks post-second dose of COVID-19 vaccine.

Initial analysis of vaccine effectiveness against symptomatic disease with the Omicron variant have been shown to be lower than compared to the Delta variant, with estimated vaccine effectiveness of between 70 to 75% in the early period after the booster dose. Although lower, this is still a substantial vaccine effect, and is higher than after one or two doses of vaccine.

Table 14: Age-standardised case rate per 100,000 individuals by week and vaccination status, 18 December 2021 to 14 January 2022

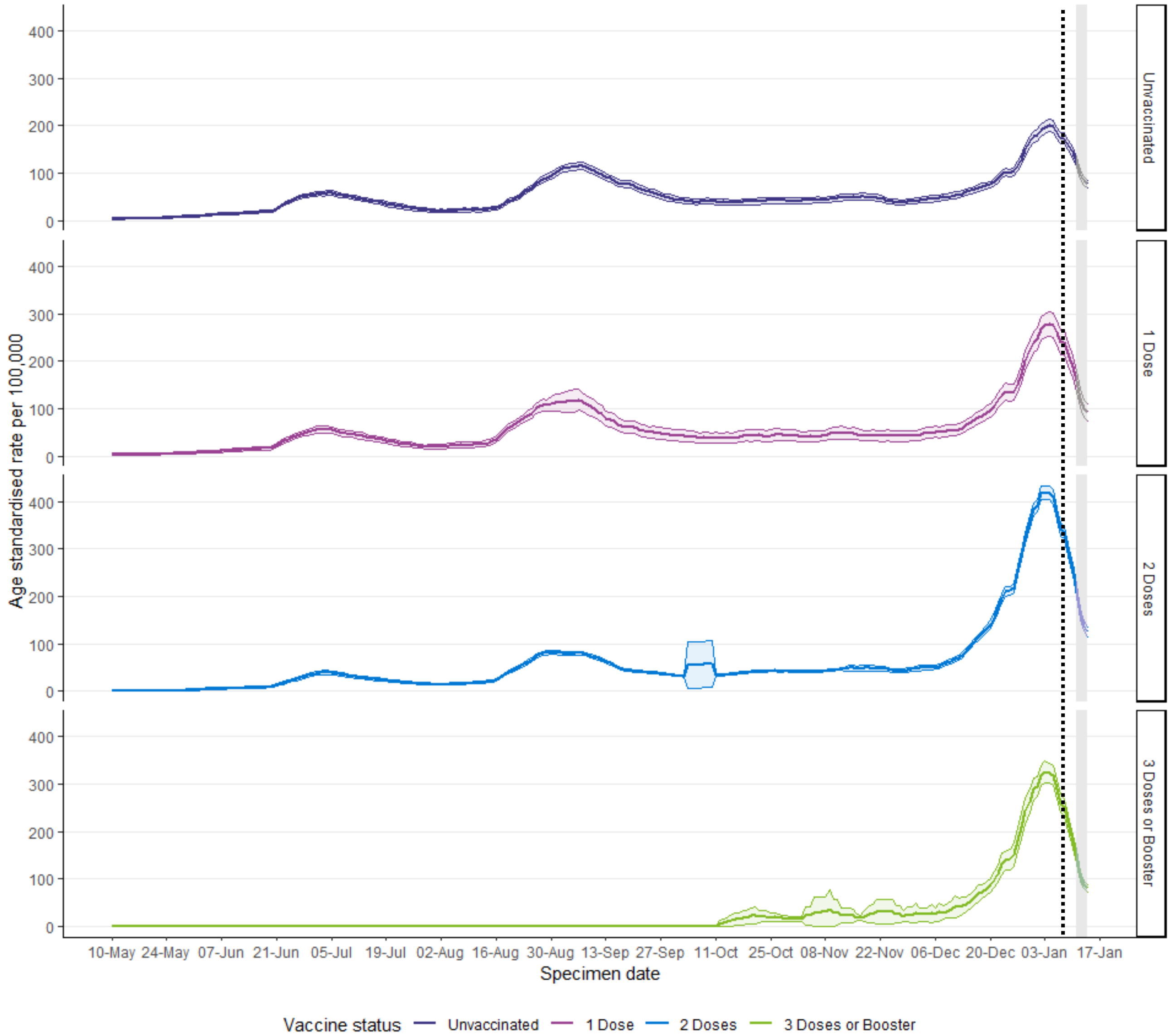
	Unvaccinated			1 Dose		
Week	No. tested positive by PCR	Population	Age-standardised case rate per 100,000 with 95% confidence intervals	No. tested positive by PCR	Population	Age-standardised case rate per 100,000 with 95% confidence intervals
18 December - 24 December 2021	5,594	1,006,025	**540.82** (518.55 - 563.08)	1,860	357,752	**780.31** (733.17 - 827.45)
25 December - 31 December 2021	9,496	998,045	**958.52** (926.37 - 990.68)	3,387	348,727	**1,409.70** (1,347.89 - 1,471.51)
01 January - 07 January 2022	9,105	988,033	**923.27** (893.85 - 952.70)	3,066	341,481	**1,393.46** (1,325.60 - 1,461.32)
08 January - 14 January 2022	3,601	979,617	**412.77** (390.36 - 435.18)	1,093	340,151	**543.98** (497.93 - 590.03)
	2 Doses			**Booster or 3 doses**		
Week	**No. tested positive by PCR**	**Population**	**Age-standardised case rate per 100,000 with 95% confidence intervals**	**No. tested positive by PCR**	**Population**	**Age-standardised case rate per 100,000 with 95% confidence intervals**
18 December - 24 December 2021	32,628	1,866,426	**1,328.29** (1,310.47 - 1,346.10)	10,092	2,069,356	**750.86** (730.63 - 771.10)
25 December - 31 December 2021	50,622	1,522,561	**2,551.97** (2,522.57 - 2,581.37)	30,041	2,429,029	**1,526.42** (1,503.94 - 1,548.90)
01 January - 07 January 2022	34,327	1,121,214	**2,418.35** (2,383.69 - 2,453.01)	35,436	2,847,027	**1,361.04** (1,345.20 - 1,376.88)
08 January - 14 January 2022	9,363	995,855	**865.79** (839.92 - 891.67)	13,566	2,982,132	**481.49** (472.73 - 490.26)

Vaccination status is determined as at the date of PCR specimen date according to the definitions described in Appendix 6. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated. Age-standardised case rates are per 100,000 people per week, standardised to the 2013 European Standard Population (see Appendix 6).

The number of PCR confirmed COVID-19 cases and case rates have declined in the last week from 08 January 2022 to 14 January 2022, **this may be due to the change in policy from 06 January 2022 where an asymptomatic individual who tests positive via a LFD test is not required to take a confirmatory PCR test**.

Individuals may test positive for COVID-19 even if vaccinated. Rates have increased for all vaccine statuses since the emergence of Omicron in December. However, the data in Table 14 does not account for severity of the case such as presence of symptoms and may include a number of asymptomatic individuals. Current evidence suggests that the vaccine is very effective at preventing hospitalisations and deaths. The rates in Table 14 should not be used as a measure of vaccine effectiveness due to unaccounted for biases and risk factors. For more information, please see the Interpretation of data section above.

Figure 13: COVID-19 age-standardised case rate per 100,000 individuals by vaccine status, seven-day rolling average from 10 May 2021 to 14 January 2022.



Vaccination status is determined as at the date of PCR specimen date according to the definitions described in Appendix 6. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated. Age-standardised case rates are per 100,000 people per week, standardised to the 2013 European Standard Population (see Appendix 6).

Age standardised rates are adjusted to only include individuals 10 years old and over and are calculated by combining rates from different age groups relative to the European standard age distribution population. These calculations have associated 95% confidence intervals shown in the shaded areas of the figure. Smaller populations have wider associated confidence intervals (see 1 dose age-standardised rate (ASR)) whereas larger populations have narrower associated confidence intervals (see 3 doses or booster ASR).

The number of PCR confirmed COVID-19 cases and case rates have declined in the last week from 08 January 2022 to 14 January 2022, this may be due to the change in policy from the 06 January 2022 (shown by the dashed line) where an asymptomatic individual who tests positive via at LFD test is not required to take a confirmatory PCR test.

Individuals may test positive for COVID-19 even if vaccinated. Rates have increased for all vaccine statuses since the emergence of Omicron in December. However, the data in Figure 13 does not account for severity of the case such as presence of symptoms and may include a number of asymptomatic individuals. Current evidence suggests that the vaccine is very effective at preventing hospitalisations and deaths. The rates in Figure 13 should not be used as a measure of vaccine effectiveness due to unaccounted for biases and risk factors. For more information, please see the Interpretation of data section above.

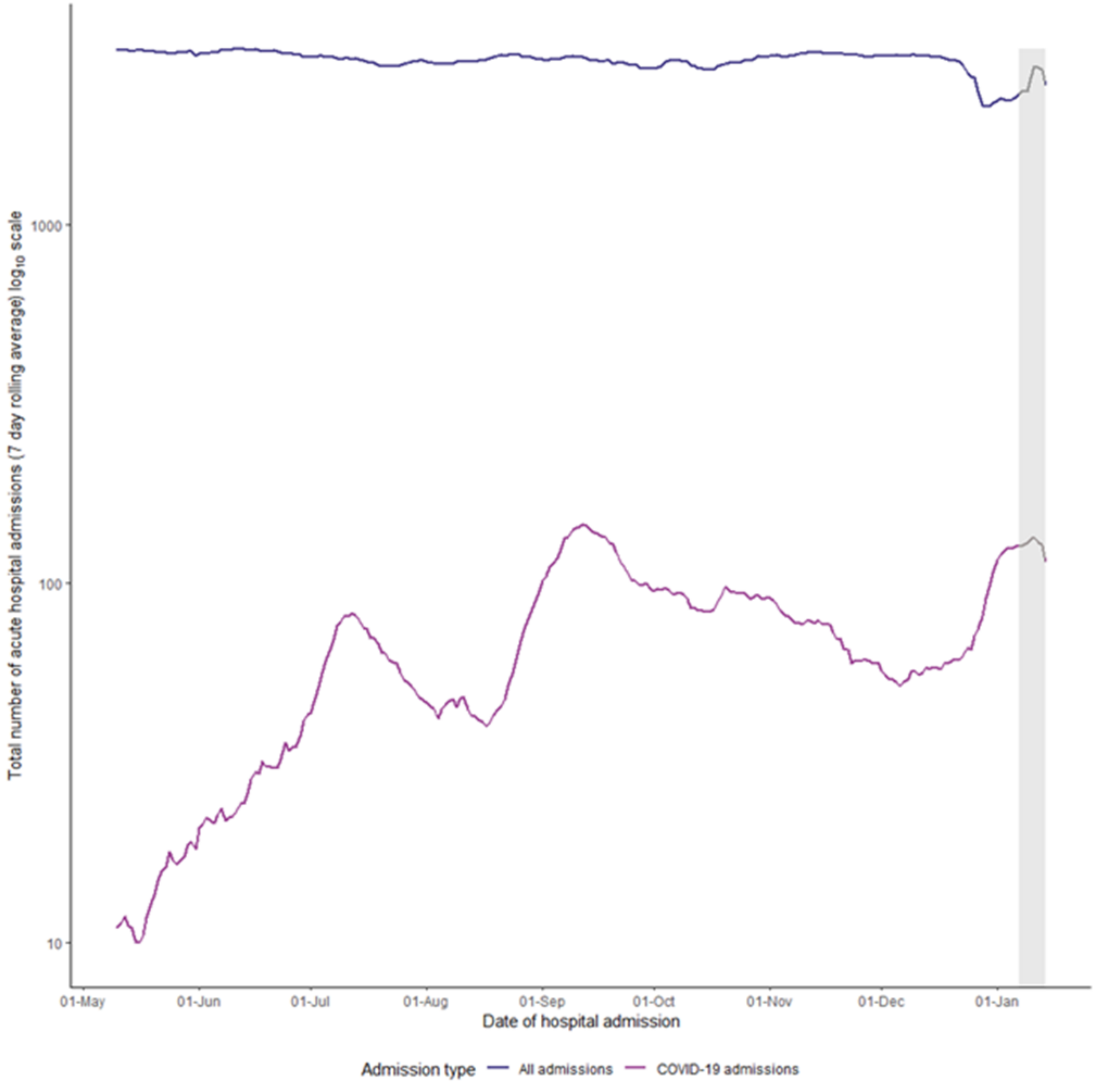
Note that the peak in the second dose category around the 11 October 2021 is likely due to a small number of individuals vaccinated within the younger age group at this time.

COVID-19 related acute hospital admissions by vaccine status

A number of studies have estimated vaccine effectiveness against hospitalisation and have found high levels of protection against hospitalisation with all vaccines against the Alpha variant. A paper observed effectiveness against hospitalisation of over 90% with the Delta variant with all three COVID-19 vaccines including AstraZeneca (Vaxzevria), Pfizer-BioNTech (Comirnaty), and Moderna (Spikevax). In most groups there is relatively limited waning of protection against hospitalisation over a period of at least five months after the second dose.

A recent pre-print suggests that risk of hospitalisation is approximately 68% lower with the Omicron variant than the Delta variant. However, these are initial findings - hospitalisation numbers were still low and the majority of Omicron cases were in younger people.
From 01 September 2020 to 14 January 2022, there were a total of 1,464,651 acute hospital admissions for any cause, of which 34,523 were associated with a COVID-19 PCR positive test 14 days prior, on admission, the day after admission or during their stay. Using the 90-day exclusion criteria between positive COVID-19 PCR tests associated with an acute hospital admission, 35,739 individuals were admitted to hospital, of which 117 were readmitted more than 90 days after their first admission.

Figure 14: Seven-day rolling average on a $\log_{10}$ scale: acute hospital admissions where the individual had a COVID-19 positive PCR test 14 days prior, on admission or during their stay in hospital, compared to all acute hospital admissions, 10 May 2020 to 14 January 2022.



Data displayed are on a $\log_{10}$ scale. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated.

COVID-19 related hospital admissions have increased to similar levels observed in September 2021, however, are small relative to all acute hospitalisations.

Table 15: Age-standardised rates of acute hospital admissions where an individual had a COVID-19 positive PCR test up to 14 days prior, on admission, or during their stay in hospital, by week and vaccination status, 18 December 2021 to 14 January 2022.

	Unvaccinated			1 Dose		
Week	No. hospitalised	Population	Age-standardised hospitalisation rate per 100,000 (95% confidence intervals)	No. hospitalised	Population	Age-standardised hospitalisation rate per 100,000 (95% confidence intervals)
18 December - 24 December 2021	133	1,111,023	**34.39** (24.69 - 44.09)	12	261,362	**10.81** (2.13 - 19.49)
25 December - 31 December 2021	164	1,105,601	**54.05** (40.55 - 67.55)	39	251,779	**40.69** (21.50 - 59.88)
01 January - 07 January 2022	174	1,099,417	**43.75** (33.00 - 54.51)	49	242,843	**46.10** (26.91 - 65.28)
08 January - 14 January 2022	130	1,093,639	**32.46** (23.48 - 41.44)	31	241,461	**26.64** (12.66 - 40.61)
	2 Doses			**Booster or 3 Doses**		
Week	**No. hospitalised**	**Population**	**Age-standardised hospitalisation rate per 100,000 (95% confidence intervals)**	**No. hospitalised**	**Population**	**Age-standardised hospitalisation rate per 100,000 (95% confidence intervals)**
18 December - 24 December 2021	170	1,864,017	**25.89** (20.42 - 31.36)	137	2,068,790	**5.29** (4.01 - 6.57)
25 December - 31 December 2021	228	1,518,996	**41.01** (33.36 - 48.66)	296	2,428,234	**9.68** (8.23 - 11.13)
01 January - 07 January 2022	247	1,116,431	**61.14** (50.52 - 71.76)	391	2,846,022	**11.09** (9.88 - 12.30)
08 January - 14 January 2022	191	989,345	**45.18** (36.00 - 54.35)	424	2,981,022	**11.68** (10.49 - 12.87)

Vaccination status is determined as at the date of positive PCR test according to the definitions described in Appendix 6. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated. Age-standardised hospitalisation rates are per 100,000 people per week, standardised to the 2013 European Standard Population adjusted to only include individuals 15 years old and over (see Appendix 6).

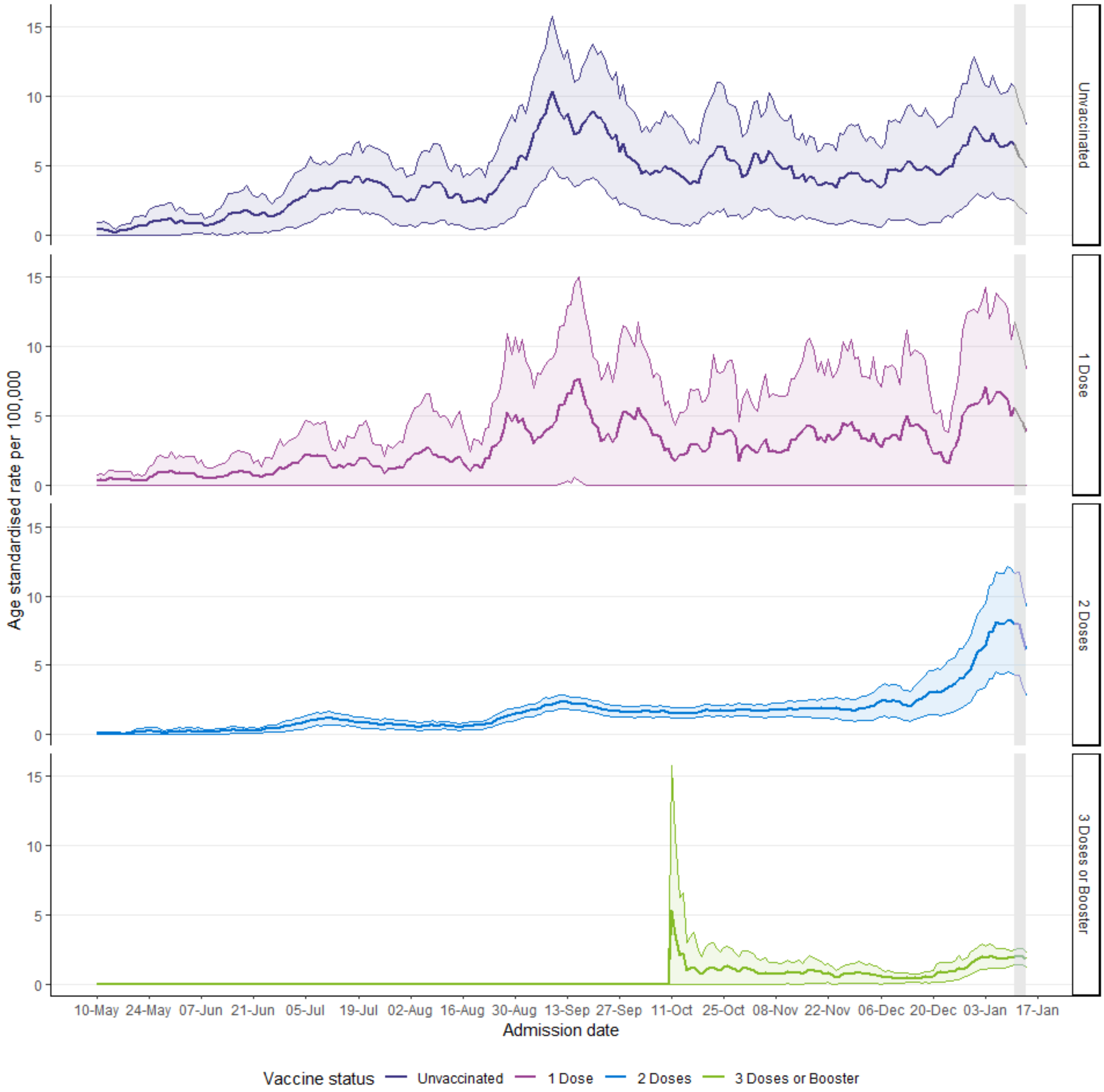
To account for the different age distribution of individuals in each vaccine status, age-standardised hospitalisation rates are reported in Table 15 and Figure 15. To align with the 2013 European Standard Population,15 years olds are now included in the number of acute hospital admissions and the population denominator. This means that data presented in Table 15 may differ from previous weeks reports which only included hospitalised individuals and denominators for 16 years and older. The rates in Table 15 should not be used as a measure of vaccine effectiveness due to unaccounted for biases and risk factors. For more information, please see the Interpretation of data section above.

In the past four weeks, from 18 December 2021 to 14 January 2022, the age-standardised rate of acute COVID-19 hospital admissions per 100,000 were lower for people who have received a booster or third dose of a COVID-19 vaccine compared to individuals that are unvaccinated or have received one or two dose of a COVID-19 vaccine. In the last week from 08 January to 14 January 2022, in an age-standardised population, the rate of acute COVID-19 related hospital admissions in individuals that received a booster or third dose of a COVID-19 vaccine was between 2.3 to 3.9 times lower than in individuals who are unvaccinated or have only received one or two doses of a COVID-19 vaccine.

From 08 January to the 14 January 2022, of the post second dose acute COVID-9 related hospital admissions in Table 15, over 60% received their second dose of vaccine more than 6 months prior to test.

Please note that these statistics do not differentiate between individuals in hospital with COVID-19 illness requiring hospitalisation compared to those in hospital for other reasons (e.g. routine operations) for whom COVID-19 was identified incidentally through testing but they are not requiring hospitalisation because of their COVID-19 symptoms.

Figure 15: Age-standardised hospitalisation rate of acute hospital admissions where an individual had a COVID-19 positive PCR test up to 14 days prior, on admission, or during their stay in hospital, per 100,000 individuals by vaccination status, seven-day rolling average from 10 May 2021 to 14 January 2022.



Vaccination status is determined as at the date of positive PCR test according to the definitions described in Appendix 6. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated. 95% confidence intervals are shown as the shaded regions. Age-standardised hospitalisation rates are per 100,000 people per week, standardised to the 2013 European Standard Population adjusted to only include individuals 15 years old and over (see Appendix 6).

To align with the 2013 European Standard Population,15 years olds are now included in the number of acute hospital admissions and the population denominator. This means that data presented in Table 15 may differ from previous weeks reports which only included 16 years and older. The rates in Figure 15 should not be used as a measure of vaccine effectiveness due to unaccounted for biases and risk factors. For more information, please see the Interpretation of data section above.

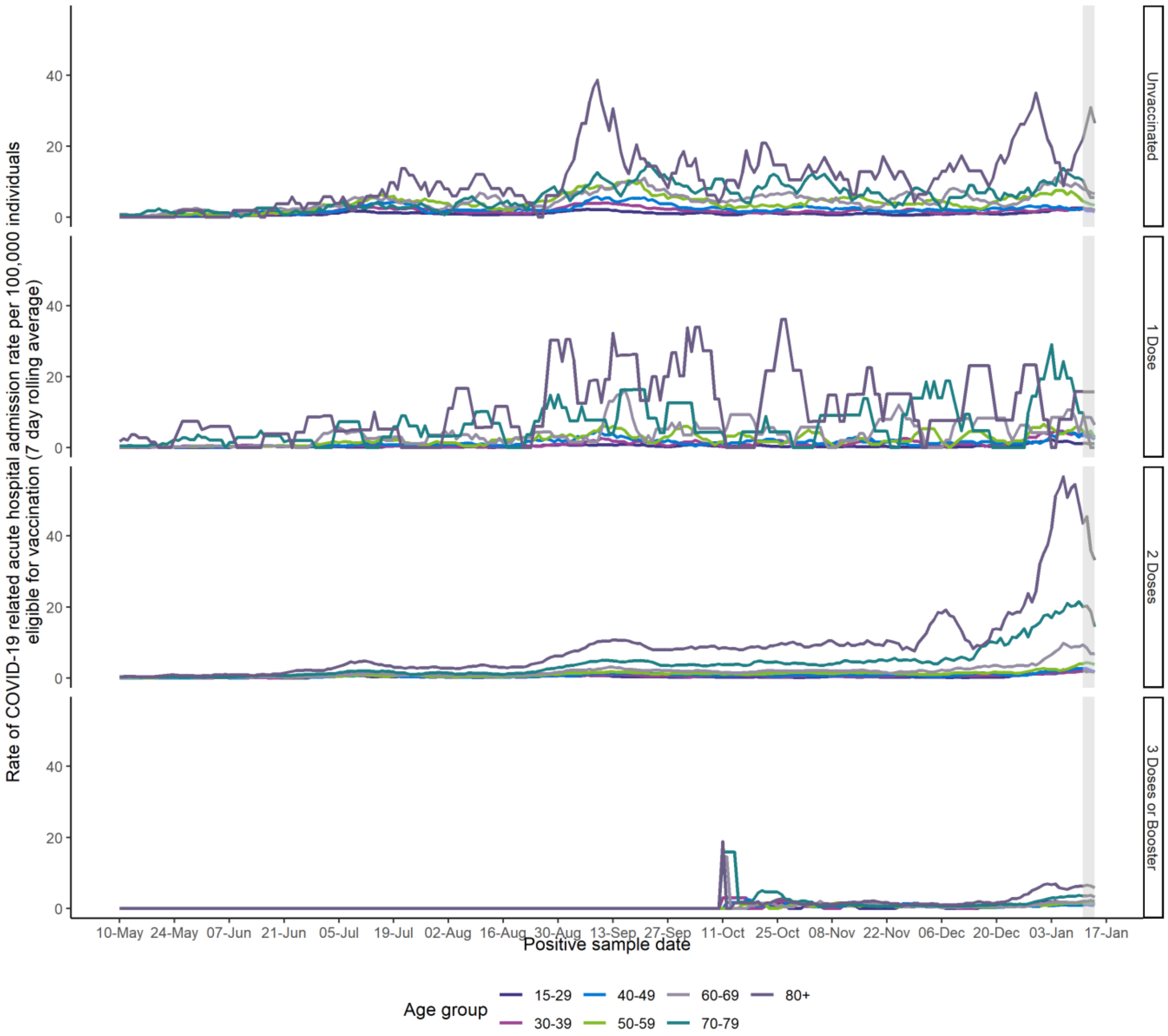
Age standardised rates are adjusted to only include individuals 15 years old and over and are calculated values by combining rates from different age groups relative to the European

standard age distribution population. These calculations have associated 95% confidence intervals shown in the shaded areas of the figure. Smaller populations have wider associated confidence intervals (see 1 dose age-standardised rate (ASR)) whereas larger populations have narrower associated confidence intervals (see 2 doses ASR).

The age standardised rate of acute hospital admissions for individuals with a booster or third dose remains lower compared to people unvaccinated or who have only received one or two doses of a COVID-19 vaccine.

Note that the peak in the booster or third dose category around 11 October 2021 is likely due to a small number of individuals vaccinated and the prioritisation of the booster/third dose to the clinically extremely vulnerable at the beginning of the booster programme.

Figure 16: Seven-day rolling average COVID-19 related acute hospital admissions by vaccination status and by age group, 10 May 2021 to 14 January 2022



Vaccination status is determined as at the date of positive PCR test according to the definitions described in Appendix 6. Patient age is determined as their age the date of admission. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated.

The rates in Figure 16 should not be used as a measure of vaccine effectiveness due to unaccounted for biases and risk factors. For more information, please see the Interpretation of data section above.

Overall, the highest rates of acute COVID-19 related hospital admissions were in the oldest age groups. In groups where a very large proportion of individuals have been vaccinated (such as individuals over age 70), any small changes in COVID-19 related acute hospital admissions will result in a larger change shown in the graph, for example in the over 70 1 dose vaccinated group. These changes tend to be more ‘step like’ and less smooth.

Confirmed COVID-19 deaths by vaccination status

COVID-19 vaccines are estimated to significantly reduce the risk of mortality for COVID-19, however a small number of COVID-19 deaths are still expected in vaccinated people, especially in vulnerable individuals where the vaccine or the immune response may not have been effective. Evidence has shown that vaccination is highly effective in protecting against death from coronavirus (COVID-19). Data published by UKHSA have shown high levels of protection (over 90%) against mortality with all three COVID-19 vaccines including AstraZeneca (Vaxzevria), Pfizer-BioNTech (Comirnaty), and Moderna (Spikevax), and against both the Alpha and Delta variants. Research from Public Health Scotland, University of Edinburgh and University of Strathclyde, have shown two vaccine doses, whether the AstraZeneca (Vaxzevria) or the Pfizer-BioNTech (Comirnaty) vaccine, are over 90 per cent effective at preventing deaths from the Delta variant of COVID-19.

A recent paper on COVID-19 booster vaccine effectiveness against mortality found that individuals over 50 years old who received a Pfizer-BioNTech (Comirnaty) booster dose of COVID-19 vaccine five months after their first two doses had 90% lower mortality than those who only received two doses more than five months previously.

Table 16: Number of confirmed COVID-19 related deaths by vaccination status at time of test and age-standardised mortality rate per 100,000, 11 December 2021 to 07 January 2022

	Unvaccinated			1 Dose		
Week	**No. of deaths**	**Population**	**Age Standardised Mortality Rate per 100,000 with 95% confidence intervals**	**No. of deaths**	**Population**	**Age Standardised Mortality Rate per 100,000 with 95% confidence intervals**
11 December - 17 December 2021	18	1,567,709	**7.21** (2.67 - 11.74)	3	357,775	**3.91** (0.00 - 9.17)
18 December - 24 December 2021	6	1,559,729	**1.70** (0.23 - 3.16)	7	348,750	**15.28** (2.88 - 27.69)
25 December - 31 December 2021	8	1,549,716	**4.93** (0.55 - 9.30)	1	341,505	**0.36** (0.00 - 1.05)
01 January – 07 January 2022	12	1,541,298	**7.62** (2.38 - 12.85)	3	340,177	**7.38** (0.00 - 16.18)
	2 Doses			**Booster or 3 doses**		
Week	**No. of deaths**	**Population**	**Age Standardised Mortality Rate per 100,000 with 95% confidence intervals**	**No. of deaths**	**Population**	**Age Standardised Mortality Rate per 100,000 with 95% confidence intervals**
11 December - 17 December 2021	36	1,866,427	**7.68** (5.04 - 10.31)	8	2,069,356	**0.20** (0.06 - 0.33)
18 December - 24 December 2021	24	1,522,561	**6.54** (3.79 - 9.28)	15	2,429,030	**0.33** (0.16 - 0.49)
25 December - 31 December 2021	21	1,121,214	**7.11** (3.85 - 10.38)	9	2,847,028	**0.21** (0.07 - 0.34)
01 January – 07 January 2022	26	995,855	**11.89** (7.14 - 16.64)	21	2,982,133	**0.46** (0.26 - 0.65)

Vaccination status is determined as at the date of positive PCR test according to the definitions described in Appendix 6. A confirmed COVID-19 related death is defined as an individual who has tested positive by PCR for SARS-CoV-2 at any time point and has COVID-19 listed as an underlying or contributory cause of death on the death certificate. Age-standardised mortality rates per 100,000 people per week, standardised to the 2013 European Standard Population (see Appendix 6). This definition is for the purposes of evaluating the impact of the COVID-19 vaccine on confirmed COVID-19 deaths. The numbers reported in this section may differ from other published COVID-19 death data. Data are based on date of registration. In Scotland, deaths must be registered within 8 days although in practice, the average time between death and registration is around 3 days. More information on days between occurrence and registration can be found on the NRS website. The data displayed within the greyed-out section are considered preliminary and are subject to change as more data is updated.

The rates in Table 16 should not be used as a measures of vaccine effectiveness due to unaccounted for biases and risk factors. For more information, please see section above Interpretation of data.

To account for differences in population size and age of the vaccination status groups over time, age-standardised mortality rates were calculated for deaths where COVID-19 was listed as an underlying or contributory cause of death on the death certificate (Table 16). In the week from 01 January to 07 January 2022, in an age-standardised population, the death rate in individuals that received a booster or 3rd dose of a COVID-19 vaccine was between 16.1 to 25.9 times lower than individuals who are unvaccinated or have only received one or two doses of a COVID-19 vaccine.

From 29 December 2020 (21 days after the start of the vaccination programme in Scotland to account for protection to develop after the first dose) to 07 January 2022, there have been 5,790 confirmed COVID-19 related deaths with a positive PCR result and where COVID-19 was recorded as an underlying or contributory cause on the death certificate.

In Scotland, from the beginning of the COVID-19 vaccination programme over 3 million individuals have received a booster or 3rd dose of a COVID-19 vaccine. Of these, 96 individuals (0.003%) tested positive by PCR for SARS-CoV-2 more than fourteen days after receiving their booster or third dose of COVID-19 vaccine and subsequently died with COVID-19 recorded as underlying or contributory cause of death. The majority of these individuals (99.0%) had several comorbidities which contributed to their deaths and the mean age was 78 years old (IQR 72 to 90 years old).

From 11 December 2021 to 07 January 2022, of the post second dose confirmed COVID-19 related deaths in Table 16, more than 95% had received their second dose of COVID-19 vaccine more than six months prior to their death. The majority of these individuals (96.3%) had several comorbidities which contributed to their deaths and the mean age was 78.1 years old (IQR 70.5 to 99 years old).

Hospital/ Wider System Pressures

NHS services across NHS Scotland are subject to increased demand during the winter period. The information presented in this section aims to support the reader in drawing insights from a wider range of existing metrics around COVID-19 and winter pressures.

Unscheduled Care

As individuals in Scotland make contact with Unscheduled Care Services, data about who they are, where they have come from, what is wrong with them and what happens to them are collected, mainly to inform their care. This provides a good picture of the potential unscheduled care journeys that an individual may travel through.

Pressures on unscheduled care services are a familiar sight during the winter. Increased incidence of respiratory infections, alongside an increased acuity of illness and demands on primary care leads to increased demand on unscheduled care.

NHS inform is Scotland's digital health and care resource, providing the up to date standardised information on COVID-19 from a health perspective. Information is provided in a range of languages and alternative formats (www.nhsinform.scot/coronavirus).

Additional information can be found on the wider impacts dashboard and also in our interactive dashboard.

NHS 24

During COVID-19 there has been a rapid reconfiguration of primary and community care services. As part of this NHS 24's 111 service has been reconfigured as an in-hours (as well as out-of-hours) route for COVID-19 triage for rapid access to care via local COVID-19 assessment hubs. In addition to this, from 1st December 2020, the national Redesign of Urgent Care Programme introduced new pathways from NHS 24 to Flow Navigation Centres, with the aim of reducing the numbers of people attending A&E and diverting to more appropriate care closer to home. This is available as part of a 24/7 service, further increasing NHS 24 in-hours activity (Monday to Friday, 8am to 6pm).

Information on COVID-19 related contacts to NHS24 and the Coronavirus Helpline are presented in our interactive dashboard which supplements this report.

Primary Care Out of Hours (OOH)

Across Scotland, NHS Boards provide Primary Care Out of Hours (OOH) services for patients' when their registered GP practice is closed. Information is available via the Wider Impacts dashboard.

Scottish Ambulance Service (SAS)

Key statistics on unscheduled care operational measures across Scotland, including trends in the number of unscheduled care incidents, responses, conveyances to hospital, response times and hospital turnaround times is available from the Scottish Ambulance Service (SAS) weekly unscheduled care operational statistics release.

Accident & Emergency (A&E) Activity

Additional information on Accident and Emergency (A&E) performance is available via the weekly A&E activity and Waiting Times publication, which provides an update of key statistics on attendances at Accident and Emergency (A&E) services across Scotland. Accident and Emergency waiting times and activity reporting on performance against the 4 hour waiting time standard, and the target to reduce attendances at Emergency Departments.

Large decreases in attendances at A&E services in NHS Scotland were observed in spring 2020 winter 2020/21 due to the measures put in place to respond to COVID-19. Since spring 2021 attendances at A&E have been rising and are getting closer to the pre-COVID levels. However, from the summer of 2021 performance against the four hour standard has dropped below 80% and has remained at this rate for a prolonged period of time.

Emergency Admissions

The information presented in this section aims to provide a better understanding of the underlying trends in emergency admissions during this period.

Figure 17 below shows the overall weekly trend of emergency acute hospital admissions (including COVID-19) from week ending 05 January 2021 to 11 January 2022. The number of emergency admissions have generally been decreasing since week ending 09 November 2021.

Figure 17: Trend of all Emergency Acute Hospital Admissions in Scotland

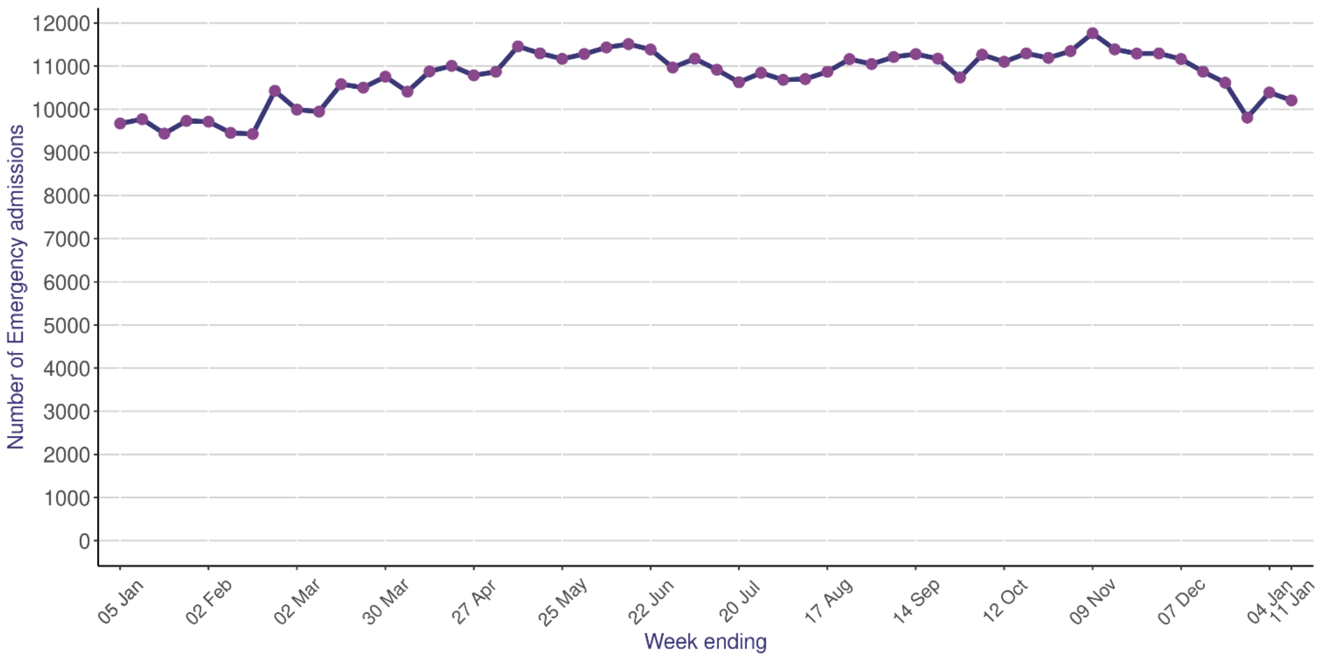


Table 17 below shows a breakdown of Emergency Admissions to acute hospital across all ages and by age group for the period 15 December 2021 to 11 January 2022.

Table 17: Emergency Hospital Admissions by age as at 11 January 2022[3]

Age Band	15 December – 21 December	22 December – 28 December	29 December – 04 January	05 January – 11 January
Under 18	1,342	1,087	1,062	1,005
18-29	689	602	687	656
30-39	797	658	726	799
40-49	864	768	820	825
50-54	594	513	538	563
55-59	689	666	676	710
60-64	757	698	771	740
65-69	767	742	826	818
70-74	998	933	1,004	1,003
75-79	941	955	991	1,018
80+	2,178	2,186	2,289	2,069
Total	**10,616**	**9,808**	**10,390**	**10,206**

Source: RAPID (Rapid and Preliminary Inpatient Data)

3. Please refer to Appendix 3 – Hospital Admissions Notes for explanatory notes regarding RAPID Hospital Admissions.

In the latest week, there has been a 1.8% decrease in the number of emergency admissions, with those aged 80+ years having the highest number of admissions. Also, in the latest week 55.3% of the hospital admissions related to patients aged 60+.

Waiting Times

Waiting times are important to patients and are a measure of how the NHS is responding to demands for services. Measuring and regular reporting of waiting times highlights where there are delays in the system and enables monitoring of the effectiveness of NHS performance throughout the country.

Public Health Scotland routinely publish a range of statistics on Waiting Times, including: waiting times for diagnostic tests, new outpatient appointments, inpatient and day case treatments.

These statistics continue to be affected by the COVID-19 (Coronavirus) pandemic. At the start of the outbreak, many services were paused or reduced and there were fewer referrals. Boards started to resume relevant services, from June 2020. However, as a second wave of COVID-19 cases emerged through the Autumn and winter months, many Boards had to temporarily pause non-urgent diagnostic tests during the months of January and February 2021. Access to services has generally increased since then but some Boards may have been temporarily impacted by a return to high infection rates in recent months as lockdown restrictions eased.

Delayed Discharges

Timely discharge from hospital is an important indicator of quality. It is a marker for person-centred, effective, integrated and harm free care.

For most patients, following completion of health and social care assessments, the necessary care, support and accommodation arrangements are put in place in the community without any delay and the patient is appropriately discharged from hospital.

A delayed discharge occurs when a patient aged 18 years and over, clinically ready for discharge, cannot leave hospital because the other necessary care, support or accommodation for them is not readily accessible and/or funding is not available, for example to purchase a care home place.

Public Health Scotland publish monthly statistics on Delayed Discharges in Scotland. These figures provide the number of hospital bed days associated with delayed discharges and the number of discharges from hospital following a period of delay. Information is also provided on the number of people experiencing a delay in discharge from hospital at the monthly census point.

Delayed Discharge figures in NHS Scotland have been affected by measures put in place to respond to COVID-19. The marked fall in delayed discharges during 2020 is likely due to patients being moved out of hospital to increase capacity.

Wider Impact of COVID-19

The COVID-19 pandemic has direct impacts on health as a result of illness, hospitalisations and deaths due to COVID-19. However, the pandemic also has wider impacts on health, healthcare, and health inequalities. Reasons for this may include:

- Individuals being reluctant to use health services because they do not want to burden the NHS or are anxious about the risk of infection.
- The health service delaying preventative and non-urgent care such as some screening services and planned surgery.
- Other indirect effects of interventions to control COVID-19, such as changes to employment and income, changes in access to education, social isolation, family violence and abuse, changes in the accessibility and use of food, alcohol, drugs and gambling, or changes in physical activity and transport patterns.

More detailed background information on these potential impacts is provided by the Scottish Public Health Observatory in a section on Covid-19 wider impacts.

The surveillance work stream of the Public Health Scotland social and systems recovery cell aims to provide information and intelligence on the wider impacts of COVID-19 on health, healthcare, and health inequalities that are not directly due to COVID-19. The wider impact dashboard can be viewed online and includes the following topics:

- Hospital and unscheduled care
- Accident and Emergency attendances
- NHS 24 completed contacts
- Out of hours cases
- Scottish Ambulance Service
- Excess deaths
- Outpatient appointments
- Healthcare for cardiovascular disease
- Healthcare for mental health
- Women booking antenatal care
- Healthcare for birth and babies
- Termination of pregnancy
- Child health
- Cancer
- Substance use
- Injuries

These analyses are based on a selected range of data sources that are available to describe changes in health service use in Scotland during the COVID-19 pandemic. More detailed information is available at NHS Board and Health and Social Care Partnership (HSCP) level.

Contact

Public Health Scotland

phs.covid19data&analytics@phs.scot

Further Information

COVID surveillance in Scotland

Scottish Government
Daily Dashboard by Public Health Scotland National Records of Scotland

UK and international COVID reports

Public Health England
European Centre for Disease Prevention and Control
WHO

Weekly National Seasonal Respiratory Report

Weekly national seasonal respiratory report - Week 1 2022 - Weekly national seasonal respiratory report - Publications - Public Health Scotland

The next release of this publication will be 26 January 2022.

Open Data

Data from this publication is available to download from the Scottish Health and Social Care Open Data Portal.

Rate this publication

Let us know what you think about this publication via the link at the bottom of this publication page on the PHS website.

Early access details

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", PHS is obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access:

Scottish Government Health Department
NHS Board Chief Executives
NHS Board Communication leads

Appendices

Appendix 1: Background information

In late December 2019, the People's Republic of China reported an outbreak of pneumonia due to unknown cause in Wuhan City, Hubei Province.

In early January 2020, the cause of the outbreak was identified as a new coronavirus. While early cases were likely infected by an animal source in a 'wet market' in Wuhan, ongoing human-to-human transmission is now occurring.

There are a number of coronaviruses that are transmitted from human-to-human which are not of public health concern. However, COVID-19 can cause respiratory illness of varying severity.

On the 30 January 2020 the World Health Organization declared that the outbreak constitutes a Public Health Emergency of International Concern.
Extensive measures have been implemented across many countries to slow the spread of COVID-19.

Further information for the public on COVID-19 can be found on NHS Inform.

Appendix 2: World Health Organisation (WHO): Contact tracing in the context of COVID-19

The WHO initially produced guidance on "*enhanced criteria to adjust public health and social measures in the context of Covid-19"* in May 2020. The relevant extract from the criteria about the effectiveness of contact tracing within the context of public health surveillance at that time was:

At least 80% of new cases have their close contacts traced and in quarantine within 72 hours of case confirmation	These indicate that the capacity to conduct contact tracing is sufficient for the number of cases and contacts

Source: https://apps.who.int/iris/rest/bitstreams/1277773/retrieve

In response to questions about whether the Scottish Government had been incorrectly comparing Scottish performance with the WHO "standard" (on the basis that counting in Scotland might start at the wrong point in the process), an assessment was undertaken at the start of 2020, and is available within Appendix 2 of the Weekly Covid-19 Statistical report (publication date 27 January 2021).

Please note this "standard" has subsequently been replaced with further WHO guidance issued in February 2021, reflecting the evolution of the state of the pandemic. This revised guidance now focuses on targeted approaches to contact tracing based on transmission patterns, engaging communities, and prioritising follow-up of high risk cases when it is not possible to identify, monitor and quarantine all contacts.

Appendix 3: Hospital Admissions Notes

Hospital Admissions

RAPID (Rapid and Preliminary Inpatient Data)

COVID-19 related admissions have been identified as the following: A patient's first positive PCR test for COVID up to 14 days prior to admission to hospital, on the day of their admission or during their stay in hospital. If a patient's first positive PCR test is after their date of discharge from hospital, they are not included in the analysis.

The number reported does not take into account the reason for hospitalisation. Therefore, people that were admitted for a non COVID-19 related reason (and tested positive upon admission) may be included.

RAPID is a daily submission of people who have been admitted and discharged to hospital. These data include admissions to acute hospitals only and do not include psychiatric or maternity/obstetrics specialties. Figures are subject to change as hospital records are updated. It can take 6-8 weeks or longer before a record is finalised, particularly discharge details.

In the data presented here, an admission is defined as a period of stay in a single hospital. There may be multiple admissions for a single patient if they have moved between locations during a continuous inpatient stay (CIS), or if they have been admitted to hospital on separate occasions.

Hospital Inpatients (Scottish Government Data)

Number of patients in hospital with recently confirmed COVID-19
This measure (available from 11 September 2020 and first published 15 September 2020) includes patients who first tested positive in hospital or in the 14 days before admission. Patients stop being included after 28 days in hospital (or 28 days after first testing positive if this is after admission). Further background on this new approach is provided in this Scottish Government blog.

This is based on the number of patients in beds at 8am the day prior to reporting, with the data extract taken at 8am on the day of reporting to allow 24 hours for test results to become available. Where a patient has not yet received a positive test result they will not be included in this figure. Patients who have been in hospital for more than 28 days and still being treated for COVID-19 will stop being included in this figure after 28 days.
All patients in hospital, including in intensive care, and community, mental health and long stay hospitals are included in this figure.

Appendix 4: Contact Tracing

Definitions

An **index case** is generated for each positive result with a test date on or after 28 May 2020. This includes tests derived from Scottish and UK Government laboratories, as well as self-reported LFD's

An **individual** is a unique person who has had a positive test. An individual can have multiple positive tests which results in multiple cases within the test and protect system. In these figures, each person is only counted once.

A **contact** may be contacted more than once if multiple positive cases list them as a contact.

Completed cases are cases which are marked as completed in the case management system, which means that all contacts have been followed up and completed. It excludes cases marked as failed, excluded, in progress or new. In the latest weeks there will be cases which are still open either because contact tracing is still underway (particularly for the latest week) or the NHS Board is still managing the case as part of an open outbreak.
Weekly data presented from Monday to Sunday in order to be consistent. Figures are provisional and may change as the test and protect tool is updated by contact tracers.

Individuals unable to be contacted

This information is only available for index cases that have been recorded on the CMS. The CMS went live on 22 June 2020 with NHS Boards migrating on a phased approach with all Boards using CMS from 21 July 2020. Prior to a Board migrating to CMS, data was recorded in a Simple Tracing Tool which did not give the level of granularity required to report on these measures. These data are developmental and an extensive data quality assurance exercise is underway and data may be revised in subsequent publications. Please note the methodology has changed as of 1 November 2020, a refined method has now been applied to identify unique indexes.

Contact tracers will contact index cases by telephone, and by default all close contacts will receive an automated SMS. This approach ensures high quality calls can continue to be prioritised for index cases. Even when SMS is defaulted to, in these scenarios, a number of close contacts are still telephoned, following clinical risk assessment, particularly if they are linked to complex cases. When close contacts of index cases are contacted via SMS text message, the GOV.UK Notify Service is used which means it is known if the SMS has been received by the mobile phone, not just that it has been sent. Where the SMS is not received, a contact tracer will attempt to contact the individual through other means.

Appendix 5: Lateral Flow Device Testing

UK Gov other includes any LFD result which has come through the UK Government route (NHS Digital) which has the test site code “Other”. Please note the universal offer results up to 28 July 2021 are reported via this method. From 28 July 2021 onwards, universal offer results are reported separately as Universal Offer.

The Attend An Event, High Cases In Local Area, Lives With Someone Who Is Shielding, Travel Within UK and Universal Offer categories only include data from 28 July 2021 onwards. From this date these categories are now options when entering a non-work LFD result via the UK Gov portal. Please note that it is up to the user to select the Attend An Event, High Cases In Local Area, Lives With Someone Who Is Shielding or Travel Within UK category, these are not part of any defined testing programme such us Community Testing or University Testing.

University Testing Site tests are tests which took place at a university testing site, generally in the 2020/21 academic year, though there are still a small number of tests each week in this category. Tests in the university students and university staff categories are tests via the UK

Gov portal for someone entering a test to attend their place of work/education, these tests are from 28th July 2021 onwards and will be for the 2021/22 academic year.

For information regarding LFD testing during term time as part of the Schools Asymptomatic Testing Programme, please visit the COVID-19 Education Surveillance Report.

Please note bulk uploading functionality is not yet available so data is likely to be an undercount. Data will be update and revised in future publications.

Other is any result entered via the gov.uk website where “none of the above” has been selected. Please note anyone requesting a LFD test via the general population offer, will currently report their results via this category.

Appendix 6: Data Sources and Limitations

Date of extraction and analysis

Due to delays in reporting, figures are subject to change as records are updated. A marker (greyed-out block) has been applied where data is preliminary and caution should be taken in their interpretation.

The definitions described below are being used for the purposes of evaluating the impact of the COVID-19 vaccine on COVID-19 cases, COVID-19 related acute hospital admissions and confirmed COVID-19 deaths. The numbers reported in this section use test data, accounting for potential reinfections, and may differ from other sections and elsewhere which only count the number of new COVID-19 cases.

Please note that this section only includes PCR confirmed COVID-19 cases, COVID-19 related acute hospital admissions and confirmed COVID-19 deaths. Lateral flow test (LFT) confirmed cases are not included in this section and therefore will result in an underestimation of recent case rate trends. Work is underway to include these data in future publications.

COVID-19 PCR test results: All positive COVID-19 PCR test results and associated demographics of an individual are extracted from the Test and Protect database (Corporate Data Warehouse) which contains test results from ECOSS. Data included in this analysis is reported up until the Friday of the previous week. Non-Scottish residents are excluded from the dataset.

COVID-19 cases are identified as the following: An individual that has tested positive for COVID-19 by PCR. If an individual tests positive more than once, the repeat positive PCR test is only counted if the positive PCR test is more than 90 days apart. Records with missing CHI numbers are excluded as these data cannot be linked to vaccination status.
COVID-19 cases included for the age-standardised rates only includes individuals 10 years old and over. Although the majority of 10- and 11-year-olds are currently not eligible for vaccination, the five-year age band standardised to the 2013 European Standard Population used in this analysis ranges from 10-14 years and therefore cases and denominators for these age groups are included.

Denominators for the 16 and over population are taken from the COVID-19 vaccination database. The denominator for under 16 year olds is from the NRS mid-2020 population

estimates. Population data are extracted from Community Health Index (CHI) dataset representing all those currently registered with a GP practice in Scotland. These are different denominators than those in the Public Health Scotland COVID-19 Daily Dashboard and may over-estimate the population size as they will include, for example, some individuals who are no longer residents in Scotland. This is a particular issue for the denominator for the unvaccinated cohort, because for vaccinated individuals we know they were resident in Scotland at the time of their vaccination whereas for the unvaccinated cohort there will be a mixture of people who have chosen not to have the vaccine and those who are no longer resident in Scotland. This means that the rates of COVID infection and harm for the unvaccinated groups will be underestimated, whereas the rates for the vaccinated groups will be more accurate.

Vaccination status for all individuals who test positive for COVID-19 by PCR is extracted from the data used to produce the PHS vaccine uptake/daily dashboard. Vaccine records include the number of doses and date of vaccination. Individuals are listed as unvaccinated if there is no vaccination record linked to their unique CHI identifier at the time of analysis. Vaccination status is taken at date of specimen for COVID-19 cases, acute hospital admissions, or death and assigned to number of doses according to the case definitions described below.

COVID-19 vaccination status is defined as per the following:

- **Unvaccinated:** An individual that has had no doses of COVID-19 vaccine and has tested positive for COVID-19 by PCR or has had one dose of COVID-19 vaccine and has tested positive less than or equal to 21 days after their 1st dose of COVID-19 vaccine.
- **Dose 1:** An individual that has had one dose of COVID-19 vaccine and has tested positive for COVID-19 by PCR more than 21 days after their 1st dose of COVID-19 vaccine or less than or equal to 14 days after their second dose of COVID-19 vaccine.
- **Dose 2:** An individual that has had at least two doses of COVID-19 vaccine and has tested positive for COVID-19 by PCR more than 14 days after their 2nd dose of COVID-19 vaccine.
- **Booster or 3 doses**: An individual that has had a booster or 3rd dose of COVID-19 vaccine and has tested positive for COVID-19 by PCR more than 14 days after their booster or 3rd dose of COVID-19 vaccine.
-

COVID-19 related acute hospital admissions have been identified as the following: An individual that has tested positive for COVID-19 by PCR:

- Up to 14 days prior to hospital admission
- On the day of, or day following admission (if no discharge date is available)
- In between hospital admission and discharge (if there is a valid discharge date available).
- Are 15 years old and over.

Where an individual has more than one PCR positive test, positive results are only included for the first PCR positive test associated with a hospitalisation, or if the positive PCR test is more than 90 days after the previous PCR positive test that was eligible for inclusion. Using these criterion, all records of hospitalisation occurring within 90 days of a previous positive test are excluded. Therefore, if a positive PCR test result for an individual meets these criteria for multiple hospital stays, for example, an individual is admitted twice within a week, only the earliest hospital admission is included in the analysis.

If a patient tested positive after their date of discharge from hospital, they are not included in the analysis unless they are readmitted to hospital and meet the criteria described above. The number of reported acute hospitalisations does not take into account the reason for hospitalisation, Therefore, people that were admitted for a non-COVID-19 related reason (and tested positive upon admission) may be included and result in an overestimation of COVID-19 related acute hospitalisations.

Hospital admission data is extracted from the Rapid and Preliminary Inpatient Data (RAPID) dataset on Monday 17 January 2022. RAPID is a daily submission of people who have been admitted and discharged to hospital. Figures are subject to change as hospital records are updated. Data included in this analysis is reported up until the Friday of the previous week. In the data presented here, an admission is defined as a period of stay in a single hospital. If the patient has been transferred to another hospital during treatment, each transfer will create a new admission record. Therefore, there may be multiple admissions for a single patient if they have moved between locations during a continuous inpatient stay (CIS), or if they have been admitted to hospital on separate occasions.

Confirmed COVID-19 deaths: Death data were extracted from the SMRA dataset on Thursday 13 January 2022. Data included in these analyses are reported up until the last date of death registration for the previous week.

A confirmed COVID-19 related death is defined as an individual who has tested positive by PCR for SARS-CoV-2 at any time point and has COVID-19 listed as a underlying or contributory cause of death on the death certificate. Vaccine status is determined at time of most recent specimen date.

Age standardised hospitalisation and mortality rates are used to allow comparisons of hospitalisation and mortality rates between populations that have different age distributions. The 2013 European Standard Population is used to standardise rates. For more information see the ONS methods. Denominators used to calculate age-standardised mortality rates are the same as the cases and hospitalisations rate figures and tables described above.

Vaccine Wastage

The single source of vaccination wastage data for Scotland is through an NSS Service Now wastage form, which is populated by health board clinicians which can impact timeliness and accuracy.
It is important to note, that these statistics do not include wastage of vaccines in GPs practices. Therefore, the Scotland level figures reported above may be an under estimate.

Appendix 7: Hospital Admissions 'because of' COVID-19

For the purposes of this investigation, people admitted to hospital were included if they had a COVID-19 PCR confirmed diagnosis within 14 days prior to or in the 48 hours following their hospital admission date. All hospital admissions, including emergency and selective visits, were included. Primary outcomes of in hospital 'because of' versus coincidental 'with' COVID-19 were assigned according to the case definitions described in Box 1.

- **Definite because of COVID-19:** Admitted (or transferred in within 48 hours of admission) to a COVID-designated ward or ICU if applicable – OR – determined

through case review as having a presenting complaint mentioning COVID-19 as a cause for admission.

- **Probable because of COVID-19:** Admitted (or transferred in within 48 hours of admission) to COVID designated ward or ICU but presenting complaint does not mention COVID-19 – OR – clinical symptomatology, radiological or low oximetry or other investigation consistent with COVID diagnosis – OR – treatment indicative of COVID-19, including requirement for oxygen therapy amonst those admitted with respiratory complaint or dexamethasone, appropriate antivirals, monoclonal antibodies, etc.

- **With Covid-19** – All admissions to non-COVID-19 wards where the primary presenting complaint is complete but does not mention COVID-19.

Definite and probable cases 'because of' COVID-19 are presented as a single category, since similar case definitions were used. Cases that had an unknown admission complaint or that had a confirmatory diagnosis more than 48 hours after admission (considered to be nosocomial transmission) were excluded, as we sought to assess the contributions of community-acquired COVID-19 infections to hospital admissions rather than infections possibly or definitely acquired in hospital.

Community Health Index numbers were used to link the primary outcome of 'because' or 'with' to other information held by Public Health Scotland, including demographic data, vaccination status and variant type.

As noted in the main results, caution should be taken when comparing the results of this approach and the previous one reported in December by Public Health Scotland. In addition to the different method for assigning the outcome of 'because of' or 'with', the previously published figure would have included nosocomial transmissions. Results here based on the clinical audit methods include only community-acquired transmissions.

Other limitations that are important to consider when putting these findings into context or considering the replicability of this approach going forward is that at this point, only three Boards were able to conduct this investigation. The reason for this is because in many Boards, substantial human resources and time are required to review case files. For the three participating Boards in this investigation, there is a potential for misclassification of the primary outcome as only a single clinician was available to review and assign outcomes to cases.